FROM RESEARCH TO PRACTICE: THE EFFECT OF MULTI-COMPONENT VOCABULARY INSTRUCTION ON FOURTH GRADE STUDENTS' SOCIAL STUDIES VOCABULARY AND COMPREHENSION PERFORMANCE

A Dissertation

by

LORI DEAR GRAHAM

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2007

Major Subject: Curriculum and Instruction

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August 2007

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ABSTRACT

From Research to Practice: The Effect of Multi-Component Vocabulary Instruction on Fourth Grade Students' Social Studies Vocabulary and Comprehension Performance. (August 2007)

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M.Ed., Lamar University

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This study was designed to demonstrate the effect of implementation of multi-component vocabulary strategy instruction in fourth grade social studies. The components used included explicit instruction, student study teams, active engagement in learning tasks, vocabulary maps, connections webs, and semantic feature analysis.

The focus was on using direct, explicit instruction of vocabulary strategies and the resulting outcomes. Curriculum was designed for a six-week period using the district curriculum and state-required knowledge and skills for fourth graders. Teachers were randomly chosen for assignment to the group receiving the intervention and/or to the control group. The curriculum for this study was designed to actively engage students and to reinforce retention of word meanings in isolation as well as in context.

The study included three different school districts, five separate campuses, and a total of 375 students in grade four. There were 23 teachers in the study with students in 29 separate classes. Measures were employed to determine if there was an effect on the students in the classrooms receiving the intervention versus those receiving regular

classroom instruction. Measures used included a comprehension test, a content test, a curriculum-based measure, checkpoints for content, similar to a unit test, the TORC3 vocabulary subtest for social studies, and the Test of Silent Contextual Reading Fluency (TOSCRF).

A preliminary analysis included reliability coefficients of all instruments used in the study. Difference score analyses and descriptive statistics, along with a one-way multivariate analysis of variance (MANOVA) and a repeated measures MANOVA were completed using the effect for group, effect for time, and the interaction effect. The final analysis included a plot of classroom means for each of the instruments used in the study.

Outcomes were consistent across all administered measures. Although growth was demonstrated in both the group receiving the intervention and the group receiving regular classroom instruction, the gains were consistently greater overall with the classrooms receiving the intervention. Experimenting with practices to determine their effectiveness is critical for improving classroom instruction, and this study demonstrated that students were retaining knowledge even after six weeks post-intervention.

DEDICATION

This is dedicated to the source of strength in my life for almost 30 years now, my husband Gary, who has allowed me to embark on a number of adventures with his never-ending love and support. This time has been no exception. This journey has been complicated with family illnesses, natural disasters, and a lot of miles between us that we had never experienced before, but he cheered me on when cheering was probably not what he really wanted to do. I am thankful for God's provision of a wonderful husband and for God's help in making this possible.

To my children, who have always been involved in whatever I have done over the years and particularly with this endeavor, thank you to Natalie and her family, Todd, Ashlyn, and Jacob, for allowing her to dedicate her time to helping me; to Carrie for her love and support; and to Robert and Annie for their continual assistance and support.

Thank you to my precious mother, who has faithfully assisted with family and left me alone to write many, many days. Her strength has been evident to me through her recovery from illness and her protection of me as she sat back and watched this journey.

Not everyone is fortunate to have outstanding parental role models. I was one of the lucky ones, and so last, but not least, thank you to my dad. Although he has not been with us for the last 12 years, he played a major role in my life, and his strength and wisdom have helped me to never give up and to believe in myself and others.

This dissertation is dedicated to all of you who were committed to helping me see this through.

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CHAPTER I

INTRODUCTION

Problems in reading in the United States are very pervasive. It is evident that there is a critical need that must be addressed in a society that places a high value on literacy. Snow, Burns, and Griffin (1998) stressed the importance of reading because it is essential to succeed in our society. Further, they stated that, "In a technological society, the demands for higher literacy are ever increasing, creating more grievous consequences for those who fall short" (p. 10). This must be addressed beginning at a very early age and continuing through school with a high standard for our students. According to Perie, Grigg, and Donahue (2005), there were key findings in the outcomes of the nation's report card for fourth and eighth graders, and in order to provide clarity for these outcomes, the primary definitions are listed below:

> Basic refers to partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade. Proficient refers to solid academic performance for each grade assessed. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter. Advanced refers to superior performance. (p. 2)

Fourth grade key findings included:

- Between 2003 and 2005, eight states had an increase in average reading while two states had decreased scores; the percentage performing at or above basic increased in four states and decreased in two states.

The style for this dissertation follows that of the *Reading Research Quarterly.*

- Of the 42 states that participated in both the 1992 and 2005 assessments, 20 had higher average scores, and three had lower average scores.
- Between 1992 and 2005, the percentage at or above basic increased in 15 states and decreased in three states.

The key findings for eighth graders provided evidence of the stagnation of scores in reading instruction:

- No state had a higher average reading score in 2005 than in 2003, and seven had a lower score.
- The percentage of students performing at or above basic increased between 2003 and 2005 in one state and decreased in six states.
- Of the 38 states that participated in both the 1998 and 2005 assessments, three had higher average scores in 2005, and eight had lower average scores.
- Between 1998 and 2005, the percentage at or above basic increased in four states and decreased in 11 states.

To elaborate further, the National Assessment of Educational Progress, hereafter known as NAEP, scores use an item response theory to summarize student performance and the scale ranges from 0-500. Grade 4 is divided into two separate contexts including reading for information and reading for literary experience. Grade 8 is divided into three contexts including reading for information, reading for literary experience, and reading to perform a task. Additionally, in a sample provided in the NAEP report card for 2005, one of the questions posed to the students was intended to elicit a response demonstrating evidence of full comprehension. Only 29% of the eighth graders in 2005

received a rating of evidence of full comprehension on the sample provided. Fourth graders scored one point higher and eighth graders scored one point lower in 2005 than in 2003 on a 0-500 point scale. According to the NAEP scores, average scores in 2005 were two points higher than in the first assessment year, 1992, at both grades four and eight.

The challenges were clear from the outcomes of the nation's report card. The stagnation of scores and the complexity of teaching reading led researchers to delve into what scientifically based reading research could tell us about how we can work on improving our students' ability to read and comprehend. Societal challenges cited by Snow et al. (1998) included issues related to the large numbers of school-age children who have significant difficulties learning to read. This included children from all social classes and also pointed to the need for a focus on the increasing number of learning-disabled children, many of whom have difficulty learning to read. Lyon (as cited in U.S. Government Printing Office, 2001), in a report to the Subcommittee on Education Reform, reminded us:

> Thirty-eight percent of fourth graders can't read well enough to understand a basic paragraph. Not only that, if you disaggregate those data, over sixty percent of youngsters from poverty, primarily youngsters who are African American and Hispanic, cannot read well enough at the fourth grade to understand what they have read, and that is unconscionable. (p. 13)

Additional data from the National Center for Education Statistics, hereafter known as NCES (2000), indicated that a similar percentage of fourth graders could not read at a basic level. Also, of students who drop out of school or have a history of criminal activity or substance abuse problems, a large percentage report difficulties in

learning to read. Obviously, literacy is a current and serious issue in the United States and must be addressed.

Vocabulary as a Critical Determinant in Comprehension

According to Armbruster, Lehr, and Osborn (2003), comprehension is described as, "the reason for reading. If readers can read the words but do not understand what they are reading, they are not really reading" (p. 48). In the executive summary regarding comprehension, the National Reading Panel, hereafter known as NRP (2000), stated that three themes emerged when looking at the research data. One of the themes mentioned was that "reading comprehension is a cognitive process that integrates complex skills and cannot be understood without examining the critical role of vocabulary learning and instruction and its development" (NRP, 2000, p. 41). Increasing the number of words in a person's vocabulary was determined to be a strong predictor of students' ability to comprehend text as students must work to construct meaning through a combination of the text and the reader (Anderson & Freebody, 1981; Durkin, 1993).

According to Perie et al. (2005), there exists an overwhelming need to identify readers who struggle with comprehension to help them achieve the ultimate goal of reading instruction. The difficulty that occurs with young people in the process of obtaining vocabulary and mastering comprehension was described by Lehr, Osborn, and Hiebert (2004) as a time when students who do not have large vocabularies or effective word-learning strategies often struggle to achieve comprehension. A cycle of frustration and failure develops and too often becomes a way of life for these students (Hart &

Risley, 2003; White, Graves, & Slater, 1990). The students do not read and consequently, this results in the "Matthew Effect" (Stanovich, 1986). This effect emphasized what happens when good readers read more and learn more words, and poor readers read less and learn fewer words.

According to Phythian-Sence and Wagner (2007), "acquiring the vocabulary we use for thinking and communicating is a linguistic achievement of nearly incomprehensible importance and complexity" (p. 1). The importance of studying the value of vocabulary as a critical determinant of comprehension success or difficulty is discussed by Joshi (2005) as he pointed out:

> A well-developed meaning vocabulary is a prerequisite for fluent reading, a critical link between decoding and comprehension. However, the role of vocabulary in fluent reading has received much less attention in both research and theory than have decoding and comprehension strategies. (p. 209)

There are a multitude of reasons why students might have difficulty with vocabulary and/or comprehension. Furthermore, there have been numerous studies that have identified limited vocabulary as a persistent problem when it comes to children from economically disadvantaged homes (Biemiller, 2004; Chall, 1983; Hart & Risley, 1995; White et al., 1990). Thus, there is an urgent need to study the role of vocabulary in comprehension, particularly in the content areas (Beck & Carpenter, 1986; Beck, McKeown, & Gromoll, 1989; Beck, McKeown, Sinatra, & Loxterman, 1991; Hall, 2004; NRP, 2000).

Vocabulary instruction programs have been characterized by Beck and Carpenter (1986) as successful only if they provided training in the use of words with multiple exposures and practice in different contexts. Reference to the inconsiderateness of

textbooks by Armbruster and Anderson (1988) was a reminder that often the content area textbooks introduce a large amount of content with little or no explanation of word meanings. Students with little previous exposure and/or inadequate preparation arrive unable to cope with the inconsiderate texts.

Limited Research on Vocabulary and the Dimensions of Vocabulary Knowledge

The NRP (2000) reviewed analyses of research from 1979 to 1998. They were searching for methods effective in teaching vocabulary and text comprehension and for ways to prepare teachers to teach the most effective strategies. At that time, they found 47 studies that fit this description. However, their exhaustive inquiry did not provide the information they were searching for at the time. A formal meta-analysis was not possible as there were not enough studies that met the criteria that had been established by the NRP (2000). The importance of vocabulary knowledge was acknowledged and despite their inability to conduct the meta-analysis or to extract the information they were searching for, the NRP (2000) stated in their findings, “reading vocabulary is crucial to the comprehension processes of a skilled reader” (sec. 4, p. 3). Biemiller and Boote (2006) found only 13 studies of direct vocabulary instruction using texts and elementary school students in the past 15 years.

Looking at word meanings is certainly important and the depth of knowledge related to a word is also crucial for success. The depth of word knowledge can be

explained in terms of stages. One type of description offered by Dale and O'Rourke (1986) related to the extent of word knowledge in four stages:

Stage 1: I never saw it before.

Stage 2: I've heard of it, but I don't know what it means.

Stage 3: I recognize it in context—it has something to do with…

Stage 4: I know it.

Qualitative dimensions added to knowledge of the depth of a word, as did similar dimensions involving wordplay (Beck, McKeown, & Kucan, 2002; Calfee & Drum, 1986). Derived knowledge was also considered by Kame'enui, Dixon, and Carnine (1987) indicating that we may know enough to figure out a word's meaning in whatever context we are reading, but we may not remember that information; therefore, we have not truly learned the word. Many researchers have contributed to this topic of what it really means to "know" a word. For students who have an interest in etymology, developing the breadth of knowledge regarding a word is not a cumbersome task. For those who have had little exposure, have little or no knowledge about word origins, or lack interest in increasing their word knowledge, there exists a void that may begin at a very early age or often by the time students reach fourth grade and up.

Despite the existing body of knowledge about vocabulary, there were not many studies that met the criteria researchers were looking for in the NRP (2000), or studies involving vocabulary texts and elementary school children. This affirmed a need for further research in vocabulary instruction.

Specific Difficulty in Content Area Text

Gunning (2003) referred to the need for work in the content areas and called it "a quiet crisis in content area reading" (p. 7). Similar references are made to this evidence of crisis where students are unable to cope with their academic texts and lack word knowledge, resulting in poor reading comprehension (Harmon, Hedrick, & Wood, 2005; Hart & Risley, 2003; Schoenbach, Greenleaf, Cziko, & Hurwitz, 1999; Simmons, Griffin, & Kame'enui, 2001). Expository texts present serious challenges for students and teachers as well. Content area information must be presented in a comprehensible manner for the learner. This study was intended to assist the teacher in accomplishing that goal.

Finally, Chall and Jacobs (2003) found the first and strongest evidence of declining scores and abilities came in what has been referred to as the "fourth-grade slump." Recently, Tyre and Springen (2007) described the pressure-cooker world of nine year olds in this fourth grade slump. The difficulty in content area textbooks is described as leading to serious frustration as students are expected to take a difficult text, decode, comprehend, and make inferences. The article affirmed that this fourth grade slump is a problem that has not yet been solved. Emphasizing our fourth-grade students, there was evidence of the value of exploring the need for research of current methods of vocabulary instruction and the depth of knowledge of vocabulary in the content areas. The implementation of multi-component vocabulary instruction provided the teachers

with multiple opportunities to make the information accessible to students and to attend to comprehension in the content area of social studies.

Statement of the Problem

The ultimate goal of reading is comprehension, and according to Henry (2003), "reading is probably the most important scholarly activity a person masters" (p. 3). Snow et al. (1998) described accomplished readers as good comprehenders and added, "An important part of comprehension is concept development and knowledge of word meanings" (p. 63).

According to Blachowicz, Fisher, Ogle, and Watts-Taffe (2006), interest and research in the area of vocabulary have experienced the swing of the pendulum from one extreme to the other. It has not always been in the forefront in terms of study. However, we are reminded that there has been a clearly demonstrated strong connection between readers' vocabulary knowledge and their ability to comprehend what they read (Davis, 1944, 1968). Whipple, as early as 1925, described vocabulary knowledge and the connection to comprehension in a statement about enriching and enlarging vocabulary to promote growth in reading. He mentioned clarity of word appreciation, similar to Davis (1942), who later divided comprehension into two separate skills by referring to them as word knowledge or vocabulary and reasoning.

Additionally, Nagy (1988) described what seemed to be the thought on the part of many recent research studies at the time, "Methods of vocabulary instruction that most effectively improve comprehension of text containing the instructed words go far

beyond providing definitions and contexts. Such methods can be referred to as intensive vocabulary instruction" (p. 9). A statement made by Stahl (1999) that students from years ago and students today could still relate to was, "The importance of vocabulary knowledge for reading comprehension should be self-evident to anyone who has ever read a jargon-filled text, then scratched her head and wondered what she had just read" (p. 3). The proportion of difficult words in a text is defined by Anderson and Freebody (1981) as the single most powerful predictor of text difficulty and also that a reader's general vocabulary knowledge is the single best predictor of how well that reader can understand text.

It seems that most teachers pay some attention to vocabulary. They often introduce new words in reading lessons or through the material in specific content areas. The standard approach mentioned by Anderson and Nagy (1992) is for students to study definitions of words, compose sentences using the words, and take a test over the words on Friday of the week the words are introduced. However, research studies (Anderson & Nagy, 1992; Beck et al., 2002) do not support teaching words in this manner. According to Beck et al. (2002):

> If one asks teachers how they first introduce a word, there is a high probability that definition will be in their responses. Indeed definitions are synonymous with vocabulary instruction in many classrooms. However, the reality is that definitions are not an effective vehicle for learning word meanings. (pp. 32-33)

After a complete discussion regarding the difficulty in specifically identifying the meaning of a word through only dictionary definitions, Beck et al. (2002) stated that the key to effective activities required students to accomplish more than attending strictly to a word's meaning. The word needed to be applied in a meaningful situation in order to

allow the student to comprehend. The authors referenced rich instruction more than once and explained that rich instruction included going “beyond definitional information to get students actively involved in using and thinking about word meanings and creating lots of associations among words” (Beck et al., 2002, p. 73).

Understanding vocabulary words and their connection to other concepts is critical and influences reading comprehension (Beck et al., 2002; Foil & Alber, 2002). Not only will students have difficulty with comprehension, but the cycle associated with poor reading skills will be propagated and will further emphasize the Matthew Effect (Stanovich, 1986), which contributes to an impoverished vocabulary. This study served to take a closer look at the role of vocabulary and its critical connection to comprehension. What do students retain and what are the components that lead to greater retention?

Purpose of the Study

Although research has supported the importance of vocabulary and its relationship to comprehension, limited research has provided specific practice in authentic school contexts with direct instruction of vocabulary. Summarizing the NRP’s (2000) implications for research, the following were found:

1. There is a need for direct instruction of vocabulary items required for specific text.
2. Repetition and multiple exposures to vocabulary are important. Exposure should occur in many contexts.

3. The words should be words that are derived from content-learning materials to allow the learner to be better equipped to deal with reading in the content areas.
4. Focus must be on a complete understanding in the context of reading, rather than focusing strictly on the words. This was emphasized in particular for low-achieving or at-risk students.
5. Active engagement in learning tasks makes vocabulary learning more effective.
6. Computer technology can enhance vocabulary learning.
7. Recognize that vocabulary can be learned through incidental learning and repetition; richness of context and motivation may add to the efficacy of incidental learning of vocabulary.
8. Dependence on a single vocabulary instruction method does not provide optimal learning.

The summary on directions for further research in the NRP's (2000) report explained that we know a great deal about vocabulary growth under controlled conditions and that what we need to know is more about how growth can be fostered in authentic school contexts, with real teachers, and under realistic conditions. This study combined these important implications for research and enlisted school districts interested in providing the authentic school contexts.

Specifically, the multi-component vocabulary instruction used explicit instruction, student study teams, active engagement in learning tasks, vocabulary maps,

connections webs, and semantic feature analysis. The purpose was to address the need in vocabulary instruction and active learning within the confines of real schools and authentic settings. This study focused on determining if providing multi-component vocabulary instructional strategies for fourth graders within the content area of social studies would demonstrate a difference between the group receiving the intervention and the control group providing their regular classroom instruction.

Significance of the Study

This study will add to a body of research conducted in authentic settings and searching for effective ways to develop vocabulary that will allow for improvement in comprehension. This study included students from three different southeast Texas school districts on five separate campuses. A total of 23 teachers participated including 29 sections of students. There were 15 sections of students receiving the intervention and 14 sections serving as the control group. Specific strategies were implemented for learning vocabulary to determine if these strategies had an effect on word learning, retention, and comprehension.

As part of this study, the reading difficulty that occurs as students reach the fourth grade slump (Chall & Jacobs, 2003) was addressed at a time when our nation's report card indicated that too many students find themselves unable to read and/or to understand what they have read. The intention of the study was to provide an opportunity for students to remember and expand their existing vocabularies. The challenge and purpose behind the study was to determine if we are focusing on the

teaching of vocabulary strategies that will ultimately enlarge vocabulary and enhance a student's comprehension of text. This study adapted some of the materials from a currently funded IES Teacher Quality Grant (Simmons et al., 2005). While the grant focused on case-situated professional development, this study was designed to focus on the resulting student outcomes in vocabulary and comprehension performance after six weeks of intensive vocabulary instruction and at six weeks post-intervention.

Research Questions

Two questions were addressed:

1. What is the effect of multi-component vocabulary instruction on fourth grade students' social studies vocabulary and comprehension performance during a six-week period?
2. Is there a differential increase in student acquisition and maintenance of vocabulary six weeks post-intervention?

Limitations of the Study

The study looked specifically at the value of using instructional strategies in vocabulary to affect student outcomes in vocabulary and comprehension. Does greater emphasis on the use of strategies and multiple exposures contribute to increased use of vocabulary and greater comprehension? The strategy training and use of materials is similar in that all were provided with the same training and materials. The schools vary slightly in their makeup between districts. Two of the districts are very similar in terms

of ethnicity and general population. The third district is very different in terms of ethnicity but is identified as such in the outcomes. The study was confined to fourth grade. Although all teachers received the same training, teacher measures might vary based on their presentation.

Another factor to consider relates to the actual outcomes. The difficulty level of each item tested may vary, and yet, all will be weighted equally for the purposes of this study. Finally, since the study is a multi-component strategy, the specific strategies will not be separated in terms of their value. It is the introduction of multiple strategies and will not reveal the value of individual, specific strategies.

CHAPTER II

REVIEW OF THE LITERATURE

While we know vocabulary instruction is important, it is evident that the research base in this area is lacking. According to Gough and Tunmer (1986), the importance of vocabulary to comprehension is undeniable; but despite its importance, it has received little attention in the research. Other researchers such as Harmon et al. (2005) described the lack of vocabulary studies as amplified when searching for those specific to vocabulary development in content areas such as social studies. Joshi (2005) affirmed this lack of attention to vocabulary and its role in comprehension almost two decades after Gough and Tunmer. The NRP (2000) report provided further evidence, as researchers were unable to perform a meta-analysis due to a lack of studies that fit their criteria for inclusion.

In a longitudinal study by Cunningham and Stanovich (1998), evidence that vocabulary knowledge in first grade accounts for a difference in comprehension skills in eleventh grade propagates the fact that vocabulary clearly plays a significant role. Other studies contributed further evidence to the fact that poor vocabulary development in the early years will be reflected in students' comprehension skills in later school years (Dickinson & Tabors, 2001; Hart & Risley, 1995; Kame'enui et al., 1987; White et al., 1990). With mounting evidence of a lack of emphasis on vocabulary over an extended period of time and its resulting effect on children's vocabulary and comprehension skills,

this study sought to provide support for the importance of the role of vocabulary and its vital link to student comprehension.

The review of the research focused first on the NRP's (2000) identified instructional methods in vocabulary. This study focused primarily on explicit instruction. The review of the literature, therefore, began with the instructional methods, an explanation of content area research in vocabulary, and finally, the importance of using a multi-component strategy. In order to elaborate the benefits of the multi-component strategy, a brief review of each of the six parts that comprise the multi-component strategy instruction used in the study is provided as well.

Instructional Methods in Vocabulary

The NRP (2000) report identified five main methods of teaching vocabulary:

1. *Explicit instruction*: Explicit instruction is identified by offering students definitions or attributes of words for learning.
2. *Implicit instruction*: Implicit instruction allows students to be exposed to words and given multiple opportunities for reading.
3. *Multimedia methods*: This involves teaching vocabulary through methods using a haptic medium, which allows students to go beyond the use of text.
4. *Capacity methods*: The emphasis is on practice to increase capacity by making reading automatic.
5. *Association methods*: Learners are encouraged to connect what they know and what they encounter that is new and unfamiliar. (sec. 4, p. 3)

Vocabulary holds an important position in learning to read and its importance has long been recognized by many (Beck et al., 2002; Becker, 1977; Cunningham & Stanovich, 1998; Gunning, 2003; NRP, 2000). Specific implications for vocabulary study were described by the NRP (2000) as:

> direct instruction for specific texts; repetition and multiple exposures to vocabulary words in different contexts, specifically from content learning materials; learning through active engagement, use of computer technology, acquisition of vocabulary knowledge through incidental learning, and the fact that dependence on one type of instruction would not result in optimal learning. (sec. 4, p. 4)

These implications led to the importance of using different methods, along with the need for clear steps for strategy instruction. Students must be given the tools with which to work in order to successfully master word knowledge, and as Marzano (2003) stated, "the target of instruction might be that students have an accurate, albeit incomplete, understanding that would for the foundation on which students might build a deeper understanding through repeated interactions with the words" (p. 108).

Robust vocabulary instruction requires further elaboration of the use of different strategies (Beck et al., 2002). These authors explained that there are profound differences from the very young through high school related to differing abilities and socioeconomic status. Studies have demonstrated that first-grade children from higher SES knew twice as much as lower SES children (Graves, Brunetti, & Slater, 1982; Graves & Slater, 1987). Smith (1941) found on the opposite end, high-performing high school seniors knew four times as many words as lower-performing peers. Additionally, Smith (1941) noted high-knowledge third graders knew about four times more words than their lower-performing classmates. This introduced the need to address both ends of

the spectrum academically. Delving into the possibilities for vocabulary instruction, it becomes increasingly evident that there are many ways to address vocabulary instruction and satisfy the needs of different learners. The question becomes what strategy or strategies are most effective in reaching the learner?

The first method of vocabulary instruction referred to in the NRP (2000) report was that of explicit instruction. This particular study focuses on explicit instruction. In order to adequately reflect on the research of the experts in vocabulary, it is helpful to explore explicit instruction as well as the use of student study teams and active engagement in learning tasks to facilitate the use of vocabulary maps, connections webs, and semantic feature analysis. Each of these individual parts comprises what was used as the multi-component vocabulary instruction. First, the significance of content area vocabulary research and the purpose of using a multi-component strategy provided the bridge that led to understanding the importance of each of the individual components.

Content Area Research in Vocabulary

What happens to students in terms of their ability to learn and retain content knowledge? Given the current status of literacy, there is an obvious breakdown somewhere. Responsibility for this breakdown is typically described in relation to teachers, students, and/or textbooks. According to Bintz (1997), teachers feel somewhat ill-equipped to teach reading in the content areas. Some are unable and others are unwilling. Teacher comments relevant to their confidence in their subject matter were positive, at the same time acknowledging their lack of preparedness in dealing with the

reading process (Bintz, 1997). Knowing reading was critical to the content was one thing; being able to deliver the information to reluctant or poor readers was another. This dilemma in reading for content area teachers was often founded on the assumption that many believed elementary teachers were solely responsible for teaching reading. Students arrive in the content area classrooms to discover more complicated texts and teachers ill-equipped to work through the reading process and the content material to deliver effective instruction. According to Harmon, Hedrick, and Fox (2000), effective vocabulary instruction requires that students are actively engaged in meaningful activities supporting different levels of processing when it comes to vocabulary words and "students require multiple opportunities to learn how words are conceptually related" (p. 267). While it is important that students make these connections, it is equally important that sound vocabulary teaching practices occur in conjunction with content area subject material in order to bridge the gap for students struggling to understand different social studies concepts.

Additionally, the complexity and confusing nature of the material for students that can be found in textbooks at the fourth grade level and higher creates a roadblock for students. Many students reach this point, become frustrated, and lose interest. The reliance on textbooks has been questioned as the textbooks become increasingly difficult. It has been repeatedly demonstrated in years past that the textbooks provide difficulties for students with their increasingly difficult content and vocabulary, along with limited support provided by publishers to help solve this problem (Armbruster & Gudbrandsen, 1986; Beck & McKeown, 1991; Ciborowski, 1992; Hill & Erwin, 1984;

Wade, 1983). Have publishers responded to student needs? According to Harmon et al. (2000), publishers have considered the merit of vocabulary in their texts but are not necessarily publishing vocabulary teaching and learning activities that are supported by empirical evidence.

Specifically related to social studies texts, Beck et al. (1989) referred to a lack of background knowledge for many of our students. Beck et al. (1991) worked on revision of text material to improve comprehensibility. Through their efforts, they realized that complex content required several reiterations and discussion of ideas to clarify initial concepts for students (Beck et al., 1991).

Whether it is student, teacher, or text, it is critical that studies demonstrate the most effective ways to allow students to build their vocabularies and increase their content knowledge in areas such as social studies. The lack of vocabulary studies in relation to development specifically in the content areas was greater when searching for research in areas such as social studies (Harmon et al., 2005). If the ultimate goal of reading is comprehension as it should be, Gough and Tunmer (1986) declared the importance of vocabulary to comprehension but also acknowledged that despite the importance of the role of vocabulary to comprehension, vocabulary development receives little attention. The futility of study without the benefit of word knowledge is, in itself, incomprehensible in providing understanding of social studies concepts.

Why a Multi-Component Strategy?

Why not study a specific strategy rather than combining parts to create a multi-component strategy? According to the NRP (2000), "dependence on a single vocabulary instruction method will not result in optimal learning" (sec. 4, p. 4). Again, in their explanation of the types of instruction that appear to be effective and most promising for comprehension, the eighth strategy mentioned involves multiple-strategy teaching combining several of the different procedures for teaching text. While a single strategy could be important to a specific student, a combination of strategies enhances the effects for students and improves the likelihood of reaching different learners. If a student has an understanding of different strategies, he or she will be able to adapt the strategies according to the specific reading task (Pressley, Gaskins, Wile, Cunicelli, & Sheridan, 1991).

Probably the most well-known example of combining strategies occurs with reciprocal teaching (Palincsar & Brown, 1984; Oczkus, 2003). Reciprocal teaching uses four main strategies and combines each into a separate role that students take on as they learn the responsibilities for that role. The four include predicting, questioning, clarifying, and summarizing. Oczkus (2003) adapted the four roles and created characters to introduce students to the concepts of reciprocal teaching. The teacher trains students in their roles and essentially scaffolds the transition from teacher-to-student as they become responsible for their specific role. According to Bettenhausen (2002), reciprocal teaching was a way to encourage students to work together as a team providing multiple benefits for students. The transfer from teacher-to-student was

intended to provide a sense of ownership in learning and to allow practice so that students can learn to apply these strategies when working independently.

Research has demonstrated that providing various ways for students to work with words will stretch their understanding of the words and increase their ability to work with new words when they encounter them (McKeown, Beck, Omanson, & Pople, 1985; Stahl, 1991). There is agreement that although incidental word learning will occur (Armbruster et al., 2003; Beck et al., 2002; NRP, 2000), direct teaching of words is necessary to help students understand concepts they encounter in their reading. Word learning strategies, modeling, repeated exposures, and active engagement with words will promote clarification of word meanings that researchers suggest will improve vocabulary learning (Gordon, Schumm, Coffland, & Doucette, 1992; Scott & Nagy, 1997). Using multiple strategies and embedding these different strategies into the content, students are given numerous ways to increase their depth of understanding of the specific content area. Additionally, greater knowledge of different strategies allows students who learn differently to approach their understanding of the words and content area in a clearer fashion for the individual student, providing greater insight as they apply strategies to enhance their understanding of the current topic.

Specific Components of the Multi-Component Strategy

The components used for the multi-component vocabulary instructional strategy included the following processes and strategies: (a) explicit instruction, (b) student study teams, (c) active engagement in learning tasks, (d) vocabulary maps, (e) connections

webs, and (f) semantic feature analysis. Processes included the use of explicit instruction, student study teams, and active engagement in learning. These processes facilitated the use of vocabulary maps, connections webs, and semantic feature analysis. Further empirical evidence supporting the use of each of these follows.

Explicit Instruction

The NRP (2000) described the contributing factors to word learning in this manner:

> Vocabulary can be acquired through incidental word learning. Much of a student's vocabulary will have to be learned in the course of doing things other than explicit vocabulary learning. Repetition, richness of context, and motivation may also add to the efficacy of incidental word learning of vocabulary. (sec. 4, p. 4)

Armbruster et al. (2003) referred to "indirect vocabulary learning." The authors described the context in which indirect vocabulary learning could take place. They shared that students learn vocabulary indirectly through conversations with adults, through being read to, through reading extensively on their own, and through opportunities to hear and see words used in different contexts. Daily experiences provide a place to learn vocabulary. However, the authors agreed that despite their belief that a great deal of vocabulary is learned indirectly, some vocabulary would have to be taught directly. Some authors such as Marzano (2003) referred to the differences as two distinct philosophies, one being what he termed wide reading and the other as direct instruction.

Wide reading described by Marzano (2003) explained that the more students read, the more vocabulary terms they acquired from context. Does this ensure understanding? Others believed that wide reading was the way to enhance vocabulary

and/or they saw vocabulary as a cause and a consequence when it came to wide reading (Stanovich, 1986; Sternberg, 1987). By increasing word learning, the hope is that reading becomes easier and consequently increases the chances they will read more. Estimates by Nagy and Anderson (1984) included:

> The less able and motivated children in the middle grades might read 100,000 words a year while the average children at this level might read 1,000,000. The figure for the voracious middle grade reader might be 10,000,000 or even as high as 50,000,000. If these guesses are anywhere near the mark, there are staggering individual differences in the volume of language experience, and, therefore, opportunity to learn new words. (p. 328)

Programs facilitating wide reading have been in place for a long time. Many teachers have used Sustained Silent Reading (SSR) or Drop Everything and Read (DEAR) time. These are only two examples of a number of programs that exist for this purpose. Beck and McKeown (1991) believe the research does not support these concepts, as they explained: "research spanning several decades has failed to uncover evidence that word meanings are routinely acquired from context" (p. 799). According to Swanborn and de Glopper (1999), the ability level of a student, their particular grade level, and the difficulty of the text material are all contributing factors to acquisition of words. Direct vocabulary learning requires that students are taught word meanings and word learning strategies. Is specific word instruction sufficient? According to Graves (2000), if students are going to experience success in understanding unfamiliar vocabulary in their reading, it requires more than the acquisition of new words. Independent word learning strategies that can be demonstrated for students will assist in their ability to determine meanings of words (Baker, Simmons, & Kame'enui, 1998; Graves, 2000). Several researchers emphasize the need to model strategies such as

morphological analysis, dictionary use, and various ways to use context clues (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003; Blachowicz & Fisher, 2000; NRP, 2000). This direct, explicit instruction paves the way for students to identify words and subsequently retain their meanings through repeated application of word learning strategies.

Stahl and Fairbanks (1986) brought up one of the three hypotheses suggested by Anderson and Freebody (1981). Stahl and Fairbanks (1986) referred specifically to the instrumentalist hypothesis that described the direct effect vocabulary knowledge has on comprehension, or that knowledge of the words and their meanings directly enables an individual to comprehend text. Word learning is not just a one-time activity that students run through, discard, and move on. Immersion in a particular subject to help children build vocabulary is crucial to success for students (Strickland, Snow, Griffin, Burns, & McNamara, 2002). These authors also elaborated on how teacher effectiveness could create enthusiasm and interest in learning words. Recognizing that some contextual learning will take place, Nagy and Herman (1987) emphasized the fact that there are just too many words to teach. It is inevitable that some words will be learned incidentally. However, as Armbruster et al. (2003) described:

> Direct instruction helps students learn difficult words, such as words that represent complex concepts that are not part of the students' everyday experiences. Direct instruction of vocabulary relevant to a given text leads to better reading comprehension. Direct instruction includes: (1) providing students with specific word instruction and (2) teaching students word-learning strategies. (p. 36)

This study sought various ways to provide direct instruction and allowed students to focus on the vocabulary and its connection to the social studies content found in the social studies textbooks.

Student Study Teams

Student study teams, frequently identified as peer tutoring or class-wide peer tutoring (CWPT), had its beginning through researchers at Juniper Gardens Children's Project, according to King-Sears and Bradley (1995). The authors described class-wide peer tutoring as:

> An instructional procedure through which all students in the classroom serve as tutor and tutee within one session. Sessions are conducted from 3 to 5 days per week for a total of 20 to 30 minutes. CWPT can take the place of independent seatwork, guided practice activities, or other similar exercises scheduled into the school day. (p. 30)

The benefits of student study teams are proven. According to King-Sears and Bradley (1995), "One of the most powerful reasons for teachers to take the time to implement CWPT is that all students show academic gains" (p. 31). Some teachers might be hesitant to implement the procedures due to the fact that it is time-consuming. However, research shows that the time spent up front is well worth it in the long run. Student responses provided by King-Sears and Bradley (1995) indicate students' impressions of the use of CWPT:

> I like CWPT because it helps me to understand my reading work. It made me learn how to spell better and faster. CWPT helped me to be a better reader, and I remember what I read. When you get a wrong answer, people don't laugh at you. They say, "I'm sorry, that's incorrect." I can learn how to cooperate with others. (p. 31)

Student perceptions revealed their comfort with using CWPT. A similar definition provided by Kamps, Barbetta, Leonard, and Delquadri (1994) was: "Classwide peer tutoring is a peer-mediated strategy that has proven to be effective across a variety of subjects and grade levels in increasing academic achievement for students with and without disabilities" (p. 50). All students worked together in pairs and each changed his or her role.

Instructional demands in the school systems have changed with time. Teachers adapt their teaching to meet the demands placed upon them, and one area that has been tested and validated by research is that of the use of peer-tutoring programs (Fuchs, Fuchs, & Thompson, 2001; Kamps et al., 1994; Maheady & Harper, 1987). Typically, one student acts as the tutor, the other student acts as the tutee for a specified amount of time, and then they switch roles. Peer tutoring programs and improvement in reading skills was substantiated by Maheady, Mallette, and Harper (2005) through diverse learners with evidence-based and structured-learning approaches. In this study, student study teams allowed students to work together on mastery of the vocabulary and content material.

Active Engagement in Learning Tasks

According to Johnson, Johnson, and Schlichting (2004):

> Children learn best when they have strong personal interest and are actively and interactively involved with learning. When children are having fun—when they see a purpose or direction to their learning—learning takes on a more personal, more authentic, more welcoming quality. (p. 181)

Similarly, Strickland et al. (2002) used an example describing how the teachers can make students interested in learning:

> Well-prepared teachers also learn to give their students "word awareness." This means giving kids the drive, zest, and playful desire to learn new words because they know words are fun and valuable. Without word awareness, students are more likely to skip over words they don't know and jeopardize comprehension. (p. 64)

Researchers' findings consistently show that active participation in learning vocabulary words is best and that it is important for vocabulary learning to entail active engagement (Dole, Sloan, & Trathen, 1995; Kamil, 2004). Teachers must be cognizant of the knowledge students bring to the table and act accordingly. However, teachers must also be cautious that students are able to contribute. McKeown and Beck (2004) explained:

> Research indicates that direct instruction in vocabulary can increase vocabulary learning and comprehension. If instruction is to influence comprehension, it needs to involve a breadth of information about the instructed words and engage active processing by getting students to think about and use the words. (p. 13)

It takes both formal and informal opportunities to engage students and offer them a variety of different ways to learn words, and frequent impromptu attention to vocabulary can improve students' feelings about the value of knowing words (McKeown & Beck, 2004). The enthusiasm of the teacher and the impact student involvement has over time is increased through rich instruction. As McKeown and Beck (2004) pointed out, "The aim of rich instruction is to have students engage in active thinking about word meanings, about how they might use the words in different situations, and about the relationships among words" (p. 18). One of the characteristics of effective teachers in fourth grade found by Allington and Johnston (2002) was having classes where students were actively engaged in constructive teacher-student exchanges.

An example of encouragement provided by Allington and Johnston (2002) and designed to increase student learning of words was evident as a group of class members were discussing *King Midas and the Golden Touch* (Metaxsas, 2006). The teacher noticed and pointed out that several students used some words they had recently learned in another book, *The Whipping Boy* (Fleischman, 1986), in their talk about the book they had just read. The teacher reported support for her students as they recognized previously learned vocabulary and were able to use these relatively new words in appropriate contexts for a different book. This teacher fostered an environment where students were not only engaged but also treated with respect in regard to their learning. The teacher's modeling of literate behavior as described by Allington and Johnston (2002) served as an example of the success of one teacher's actions to actively engage students. This study encouraged teachers to be actively involved with students in encouraging and engaging, both in their activities and in their dialogue with students.

Vocabulary Maps

Mapping is defined in Harris and Hodges (1995) as, "instructional activities, particularly graphic ones, that are designed to show the relationships among ideas or topics in text or to plan for writing" (p. 149). Vocabulary maps provide the opportunity for students to visually organize information to help students think about new terms or concepts in several different ways. Mapping allows students to enlarge their vocabularies, understand relationships between existing and new concepts, extend knowledge to include multiple meanings of words, and to incorporate their existing knowledge into a format allowing the student to determine meanings in new contexts.

Exposure to new words changes the semantic or graphic representation of words already in the child's vocabulary and the relationships among them (Landauer & Dumais, 1997). This emphasizes Snow et al.'s (1998) perspective that new words are not just added in a simple fashion to existing vocabulary. In fact, creating vocabulary maps gave students the opportunity to expand their knowledge about specific words. It allowed students to visualize relationships and demonstrated multiple meanings in context. The maps used in this study served this purpose (see Appendix A). Maps can be simple or extensive enough to enlarge both students' vocabularies and students' understanding of specific words in different contexts. This particular study allowed students to find and locate the definition in their text, to consider the context and choose an appropriate sentence, to find words that were related, to describe relationships such as where you might hear or see the word or which words are real words with the same root, to view an illustration related to the word, and finally, to have the student write their own definition of the word. This takes a single word and allows students to elaborate extensively on the words and their meanings. Students were able to help each other and use the inviting and challenging maps together.

Connections Webs

The use of a connections web in this study provided a format in which students could elaborate and expand their knowledge of particular concepts. The connections web might also be referred to as a semantic map. Gunning (2003) defined a semantic map as, "a graphic organizer that uses lines and circles to organize information according to categories." Terminology is frequently intertwined in that the connections web or

semantic map might also be referred to as simply “mapping” or “webbing” as discussed in the previous section. Vocabulary maps and connections webs were not one and the same in this study. While the vocabulary map focused on words and extensions of the words, their meanings, and their use in context, the connections web provided an opportunity for students to take several different concepts and group them according to similar characteristics in a visual format (see Appendix B).

Why use a connections web? A web or map can be used for various types of lessons, including main idea and detail, compare and contrast, and/or process relationships. A web is simply a visual display of the information, and in this case, one in which the students organized and classified the information into different categories. Gunning (2003) suggested that the content and structure of material will guide what type is used but the primary idea is for key concepts to jump off the page as you view the map. Similarly, Kamil (2004) explained they are intended to organize information in a way that helps students visualize the relationships among various elements in the text by changing them from pure text to text plus graphics. Connections webs can be used for classification of concepts and would be one way to introduce vocabulary words in which information is categorically structured in a graphic or visual form (Raiziene & Grigaite, 2005). Baker, Simmons, and Kame’enui (1995) described how, in addition to vocabulary growth, the use of semantic maps can result in consistent improvements in reading comprehension. Semantic mapping has other research support for teaching new concepts and being effective in the process such as those described in Johnson and Pearson (1984).

The NRP (2000) suggests further study to determine real application of strategies, both in terms of teacher knowledge and use of the strategies. Nichols and Rupley (2004) described:

> Knowing a word in the fullest sense goes beyond simply being able to define it or getting some basic meaning for the word from context, instead it means being able to discuss, elaborate and demonstrate the meaning of the word in multiple contexts in which the word occurs. (p. 57)

Additionally, Nichols and Rupley (2004) mentioned that pairing reading instructional design with appropriate vocabulary strategies allows learners to further refine their vocabulary knowledge based on these experiences. Students should learn two or three new words a day when strategies used are related to context and allow students to actively process the information (Biemiller, 1999). Vocabulary strategies are effective tools that incorporate many of the guidelines for students to actively process vocabulary (Nichols & Rupley, 2004). Connections webs provide an effective tool that will allow students to integrate vocabulary and content knowledge.

Semantic Feature Analysis

According to Bryant, Ugel, Thompson, and Hamff (1999), semantic feature analysis is a procedure that allows students to use prior knowledge to integrate new information and helps students deal with relationships among word meanings. The semantic feature analysis chart is explained by Nagy (1988) to connect row and columns based on vocabulary and semantic features. Further support is provided by Bryant et al. (1999) who explained students would benefit from strategy instruction that allowed teachers to model and students to have opportunities to apply the strategies with content area text on a consistent basis. Students consistently have difficulty with informational

text (Armbruster, Anderson, & Meyer, 1991) and knowledge of the content aids in selecting and organizing information. Instruction necessarily needs to enhance students' ability to select and organize information from their texts, requiring greater understanding of their informational texts.

Researchers conducted a study using three interactive vocabulary instructional techniques, one of which was semantic feature analysis (Bos & Anders, 1990). The authors stated that the students who had engaged in these interactive techniques demonstrated improvement in the areas of vocabulary and comprehension. As Baker et al. (1995) described, vocabulary interventions, such as semantic feature analysis, enhanced student understanding of individual words and proved to be superior to using traditional teaching methods. This study used a semantic features analysis chart to incorporate actual content information from social studies textbooks to facilitate student understanding of the concepts. It required students to integrate their informational text with their existing knowledge and format it in a semantic feature analysis style chart.

Summary of the Research

The complexity of vocabulary in a textbook was demonstrated by Hatfield, Kelly-Coupar, Hoh, and Lindsey (1998):

> Some parts of the Sahara are giant sand seas…These large ergs are what most people picture when they think of a desert—loose sand blown into tall dunes by the wind. But most of the Sahara is made up of desert pavement and hammadas. Desert pavements are vast plains of gravel and boulders, and hammadas are rocky plateaus. Both surfaces are the result of the erosion of the soil due to the wind. (p. 534)

This excerpt was taken from a middle school geography textbook and was used by Harmon et al. (2005) in an article on research on vocabulary instruction. The vocabulary is striking as you look at the terminology in this brief quote. Thoughts on the words such as erg, dunes, hammadas, plateaus, and erosion are explained by Harmon et al. (2005):

> These excerpts, which are representative of the vocabulary that students encounter daily as they go from class to class, provide an interesting view of the vocabulary demands that may be placed upon middle students at any given time during the school year. Moreover, this well-developed word knowledge base assumes an existing knowledge base for the concepts that are addressed in each passage. (p. 262)

This excerpt is from a middle school textbook but is a prime example of the way text changes for students. The content area books starting at the fourth grade level become increasingly difficult and present a more complex vocabulary for students to master. The content area research demonstrated that although teachers are comfortable with their roles in teaching their content areas, they are not as comfortable with teaching the different aspects of reading. According to Moss (2005), it has long been recognized there is a need for emphasis of content area literacy, but it has received limited attention until the last few years. Further, Moss (2005) pointed out the need for teachers to give more attention to instruction involving expository text. Since expository text dominates instruction as students reach upper elementary grades, focusing instruction to allow students greater exposure to expository text in the earlier years seems reasonable. As Bintz (1997) described, teachers need to feel confident related to teaching reading in the content areas. This study allowed teachers to use vocabulary instruction and multiple strategies to work through the content with their students. This content knowledge can

be an invaluable tool as it contributes to schema development helping children as they progress through school (Moss, 2005).

The use of multiple strategies is emphasized by many researchers (Bettenhausen, 2002; NRP, 2000; Oczkus, 2003; Palincsar & Brown, 1984; Scott & Nagy, 1997). The multi-component strategy offered opportunity for learning various methods of integrating content and vocabulary. Students were actively engaged in the process and were challenged by the opportunity to expand their knowledge. According to Zarillo (2007), "although many alternatives exist, most teachers rely on two relatively ineffective techniques to teach the meaning of words" (p. 51). He refers to the use of displaying a word on the blackboard and the use of the dictionary. Zarillo (2007) follows these statements with lists of worthwhile alternatives. The research is clear that a variety of methods used effectively is more likely to result in optimal learning (NRP, 2000).

Curriculum for this study was designed to help students understand and retain the vocabulary knowledge and apply that knowledge in context. Using explicit instruction and delving into the social studies content area, teachers combined the use of vocabulary maps, semantic feature analysis, connections webs, student study teams, and active engagement in order to reach their students in various ways to assist students with word knowledge and application. Students were actively involved in the learning process with the teacher facilitating activities such as games like Ready, Set, Go; Vocabulary Memory; or Jeopardy in addition to their instruction. While students were expected to actively participate, there were multiple opportunities for different types of participation. These activities allowed for repetition and use of words in multiple contexts, which

allowed students to grasp word meaning and required them to use them in more than one context. Therefore, students were able to expand their knowledge, apply the knowledge to the content area materials, and extend beyond the content with various activities.

There was a clear and urgent need for in-class studies of intensive vocabulary instruction. The opportunity to create curriculum that met the needs of the schools, teachers, and students, while addressing a much-needed area of research opened the door for exploration of explicit instruction and the vocabulary-comprehension connection. The findings from the literature review demonstrated the gap in research for much-needed studies to address vocabulary instruction, its effect on comprehension, and active learning within the confines of real schools and authentic settings.

CHAPTER III

METHODOLOGY

This study was designed to demonstrate the effect of implementation of multi-component vocabulary strategy instruction in fourth grade social studies. The focus was on direct, explicit instruction of vocabulary strategies and the resulting outcomes. The acquisition and maintenance of the content learned through vocabulary strategies will be demonstrated by pretests, six-week posttests, and additional testing six weeks post-intervention. These measures were employed to determine the effects on the students in the classrooms receiving the intervention versus those receiving regular classroom instruction.

Sample

Participants in the study included 375 students in grade four. The participants came from three separate districts in the southwestern part of the United States. The research was conducted on five different campuses located in five different cities within approximately 30 miles of each other. Each campus serves students differently and will be described as such. A brief description of each district is taken from the Texas State Education Agency Academic Excellence Indicator System (AEIS) for 2005-2006.

District Y

District Y combines two communities and has two campuses that serve fourth graders; both campuses were included in the study. The district enrollment was comprised of 4,737 students with all fourth and fifth grade students being served at

Campus 1 and 2. Campus 1 enrollment included 170 fourth grade students and Campus 2 enrollment included 174 fourth grade students. See Table 1 for a breakdown of enrollment by campus and district ethnicity in District Y. Table 2 follows and includes socio-economic status by campus, including district and campus percentages of economically disadvantaged, limited English proficient, and at-risk students.

Table 1

District Y Enrollment by Campus and District Ethnicity

Enrollment	Percentage	Number
Campus 1 (total school percentages)		
African American	1.7	6
Hispanic	11.8	42
White	83.4	297
Native American	.8	3
Asian/Pacific Islander	2.2	8
Total # of students (grade 4)	47.8	170
Total # of students (grade 5)	52.2	186
Total student population at Campus 1		356
Campus 2 (total school percentages)		
African American	1.5	5
Hispanic	4.0	13
White	89.6	292
Native American	.6	2
Asian/Pacific Islander	4.3	14
Total # of students (grade 4)	53.4	174
Total # of students (grade 5)	46.6	152
Total student population at Campus 2		326

Table 1 (continued)

Enrollment	Percentage	Number
Overall Ethnic Distribution		
African American	2.4	11
Hispanic	3.5	55
White	81.8	589
Native American	.8	5
Asian/Pacific Islander	3.5	22

Table 2

District Y Socio-Economic Status by Campus and District

Socio-Economic Status	District Percentage	Campus 1 Percentage	Campus 2 Percentage
Economically Disadvantaged	21.0	26.1	24.2
Limited English Proficient (LEP)	1.5	.3	.9
At Risk	31.9	14.9	14.4

District R

District R combines two communities and has two campuses that serve fourth graders; both campuses were included in the study. The district enrollment was comprised of 3,786 students with all fourth and fifth grade students being served at Campus 1 and 2. Campus 1 enrollment included 148 fourth grade students and Campus 2 enrollment included 111 fourth grade students. These campuses were structured

differently. Campus 1 served grades four and five. Campus 2 served pre-kindergarten through grade five. See Tables 3 and 4 for a breakdown of enrollment by ethnicity, campus, and district in District R.

Table 3

District R Enrollment by Campus and District Ethnicity

Enrollment	Percentage	Number
Campus 1 (total school percentages)		
African American	10.9	34
Hispanic	2.6	8
White	85.5	266
Native American	.3	1
Asian/Pacific Islander	.6	2
Total # of students (grade 4)	47.6	148
Total # of students (grade 5)	51.8	161
Total student population at Campus 1		311
Campus 2 (total school percentages)		
African American	.8	6
Hispanic	7.0	50
White	91.6	652
Native American	.4	3
Asian/Pacific Islander	.1	1
Total # of students (grade 4)	15.6	111
Total # of students (grade 5)	46.6	152
Total student population at Campus 2		712
Overall Ethnic Distribution		
African American	5.2	40
Hispanic	5.3	58
White	87.4	918
Native American	.5	4
Asian/Pacific Islander	.6	3

Table 4

District R Socio-Economic Status and Ethnic Distribution by Campus and District

Socio-Economic Status	District Percentage	Campus 1 Percentage	Campus 2 Percentage
Economically Disadvantaged	30.8	31.5	37.4
Limited English Proficient (LEP)	1.0	0.0	2.5
At Risk	33.1	11.6	51.4*

*Significant difference is attributed to the fact that Campus 1 included grades 4 and 5, while Campus 2 included grades pre-kindergarten through 5.

District B

District B combines three communities and has three campuses that serve fourth graders. The district enrollment was 2,916 students. The district has restructured for the 2006-2007 school year to include all fourth grade students on one campus. For the AEIS reporting period, there were three campuses, all serving kindergarten through grade five. The study was on one campus consolidated for this school year. Tables 5 and 6 provide further insight into District B's campus and district enrollment by ethnicity, followed by District B's socio-economic status.

Table 5

District B Enrollment by Campus and District Ethnicity

Enrollment	Percentage	Number
Campus 1 (total school percentages)		
African American	68.6	240
Hispanic	8.3	29
White	22.6	79
Native American	.3	1
Asian/Pacific Islander	.3	1
Total # of students (grade 4)	19.1	67
Total student population at Campus 1		350
Campus 2 (total school percentages)		
African American	67.9	298
Hispanic	3.4	15
White	28.2	124
Native American	0.0	0
Asian/Pacific Islander	.5	2
Total # of students (grade 4)	18.7	82
Total student population at Campus 2		439
Campus 3 (total school percentages)		
African American	52.7	227
Hispanic	3.9	17
White	43.4	187
Native American	0.0	0
Asian/Pacific Islander	0.0	0
Total # of students (grade 4)	17.4	75
Total student population at Campus 2		431
Overall Ethnic Distribution		
African American	62.2	765
Hispanic	1.6	61
White	32.4	390
Native American	0.1	1
Asian/Pacific Islander	0.6	3

Table 6

District B Socio-Economic Status by Campus and District

Socio-Economic Status	District Percentage	Campus 1 Percentage	Campus 2 Percentage	Campus 3 Percentage
Economically Disadvantaged	70.7	79.4	69.9	71.0
Limited English Proficient (LEP)	1.2	4.6	0.0	0.0
At Risk	51.0	50.6	46.2	55.9

For the purpose of this study, conferences were held with each of the principals of the schools following meetings with superintendents and assistant superintendents. The meetings were held in August 2006 and teachers were chosen using random assignment. The names of the fourth grade teachers were drawn from a selection of all names of teachers assigned to teach fourth grade social studies on each campus. The first half of the names drawn were assigned to the experimental group and the second half were assigned to the control group. There were two campuses with uneven numbers where the split allowed for one less group in the control setting. One campus had two teachers who taught all sections of social studies. The first teacher's name drawn served as the experimental teacher for her four sections of students and the other teacher as the control for her four sections of students. All districts, schools, and personnel involved were identified by letters or numbers to protect the anonymity of everyone involved in the study. There were 29 sections of students who participated. Many students were unable to participate as a result of pullout programs in the schools. All schools removed

students during the social studies period for different purposes. There were also some students excluded who did not have parental permission to participate. There was a total of 23 teachers and 29 sections of students. The number of experimental and control classrooms from each district is listed in Table 7.

Table 7

Number of Experimental and Control Classrooms From Each District

District	Number of Experimental Group Teachers	Number of Control Group Teachers
Y	8	6
R	3	4*
B	4	4
Total	15	14

*District R had two participating campuses. One of the campuses was used as a control group. There were two teachers participating on this campus and neither had any exposure to the experimental teachers. This campus wanted to participate, and due to some unexpected circumstances, district administrators felt the best way for them to participate was to remain a control group campus.

More detailed information on the teachers including a breakdown of gender, ethnicity, years of teaching experience, and their educational background can be found in Chapter IV.

Procedures

Training Teachers

The research included both quantitative and qualitative methods. Teachers were surveyed in the beginning to obtain basic information regarding teaching experience,

degrees, certification, ethnicity, and gender. Also included in the survey was information related to the current use of different instructional strategies in the classroom and the teacher's perception of his or her familiarity with different strategies. This provided insight regarding current instructional practices. They were surveyed at the end for their evaluation of the curriculum and predicted future use of the instructional strategies. During observations prior to implementation, a checklist provided data regarding the use of these strategies. Curriculum notebooks for the six weeks were designed and provided for each of the experimental teachers. A comprehensive set of materials were reviewed together and all of the experimental teachers were trained in the expectations for vocabulary instructional methods prior to implementation that included the use of each of the following:

- explicit instruction
- student study teams
- active engagement in learning tasks
- vocabulary maps
- connections webs
- semantic feature analysis

Each of the multi-component vocabulary instructional strategies was included within the curriculum guides provided for all experimental teachers. Additionally, experimental teachers were provided with supplemental materials, games, activities, and extra materials for implementation of the curriculum. The first two weeks of materials were also copied and placed in student folders for every student in their classes.

Explanation of materials and the appropriate use of these materials were provided in the training sessions prior to implementation of the curriculum. The experimental teachers followed the lesson plans created for this study to implement the vocabulary strategies. The teachers were asked to spend a minimum of 90 minutes per week, preferably in a 30 minute three times per week format if time and schedules permitted to implement this intervention.

Professional training occurred during four time periods prior to the study. The first was a training session at one of the opening inservice meetings at the beginning of the school year for each school district. The experimental and control groups were addressed with an overview, and the control group was not included for the actual training session. As administrators requested, the opening meeting included both groups. However, no specific information regarding the actual study and/or implementation of strategies was discussed with the group as a whole. A second and third training session occurred with both the experimental and control groups to discuss testing procedures. The second session was for the first set of tests and the third was held before administration of posttests. One final meeting prior to implementation was also held to review, answer questions, and ensure that all teachers were ready to begin at the inception of the second six weeks of the school year. These meetings were held separately in each of the three districts. Also, as the tests were delivered and picked up, individual visits with teachers were held as needed. Testing procedures were planned in each case so that each classroom was assigned a particular format for administration to vary the order in which tests were administered.

Fidelity of Implementation

Observation of the experimental and control group teachers and their classrooms took place beginning the sixth week of the school year and continued before, during, and after the study. Each classroom was observed a minimum of once each week during the social studies instructional period. A checklist of teacher behaviors was recorded for each teacher before, during, and after the study. A brief description of the checklist follows and a detailed description of the checklist is provided in Chapter IV.

The checklist for teachers included the beginning and ending times of the observation, the name of the district and school, intervention vs. control, maximum number of students in the classroom, and maximum number of adults in the classroom during the observation. The remainder of the checklist included items related to comprehension, before, during, and after reading observations, the use of explicit instruction, teacher-prompted student justification or elaboration of responses, specific skills such as making inferences, summarizing, main ideas, drawing conclusions, and/or linking concepts during text reading.

Following the comprehension section, there was a section on vocabulary instructional strategies practice. This section included activation of prior knowledge through the use of semantic feature analysis, mapping, or word webs. It also included observation of the teacher providing explanations, definitions, or examples of vocabulary, and/or extension to include paraphrasing, and/or multiple meaning words. The use of visuals, facial expressions, demonstrations, the use of word learning

strategies, demonstrated knowledge of words by the students with teacher responses and specific application of word learning strategies.

Additionally, the checklist provided information regarding the grouping arrangements in terms of whole class, large group, small group, pairs, individuals, or no direct student contact in 15-minute increments. Materials used were checked off during the observation as well. These materials could include maps, charts, graphs, visuals, worksheets or workbook pages, textbooks, authentic texts, supplementary materials, magazines, computers, audio tapes, chalkboards, dry erase boards, overhead projectors, videos, paper, pencils, and/or any other materials. The actual intervention instruction was a full page that was coded as to the level of implementation being none of the time, part of the time, or full time. The quality of implementation was rated on a 0-2 scale associated with unacceptable, acceptable, and excellent.

This checklist contained 15 specific categories, all of which were part of the curriculum developed for this intervention. The final section of the checklist was related specifically to observing teacher effectiveness. It included feedback, active participation with students, pacing, reviewing and/or presenting material, the effective use of student study teams, and writing activities. The quality of comprehension and vocabulary instruction, maximum use of instructional time, classroom management, redirection of discussion, and finally, student engagement in the first half of the observation and the second half of the observation. The checklist was adapted from the Teacher Quality Grant (Simmons et al., 2005).

The principal investigator worked with four others who served as data collectors to observe classrooms and teachers. The data collectors were necessary due to the number of classrooms and the time schedules involved. The five observing classrooms had a combined total of over 100 years in education. Two were recently retired principals and two were recently retired teachers, all with many years in education and experience in supervision of classrooms and implementation of curriculum. In order to ensure reliability for ratings, the principal investigator observed in an experimental and a control classroom with each of the four raters. Although a schedule was prepared to ensure regular visits, raters visited each other's classes and/or visited at times other than their regular schedules to ensure continuity of implementation. This was coordinated through the teachers and the principal investigator. Teachers were cooperative about allowing us to visit at different times and on different days. School schedules for special days and/or activities necessitated an occasional change in observation schedules.

Training Data Collectors

The data collectors, mentioned previously, had years of experience in visiting classrooms. An original training session was held to explain the process and describe the research. Each data collector was provided with a notebook that included basic information about the study and the materials they would need as they entered each classroom. The forms were discussed in great detail and bi-weekly meetings were held to discuss any questions or concerns. Also, as mentioned previously, the principal investigator observed each of the four data collectors on two separate occasions. Regular

contact with the data collectors through meetings, email, and phone calls ensured continuity of the data collection.

Data Collection

Collection of data was completed prior to, during, and after the second six weeks of the semester. Fidelity of implementation measures, professional development materials, and curriculum were adapted from materials created and currently being used by the Teacher Quality Research Project (TQRP) funded through the U.S. Department of Education's Institute of Educational Sciences, grant contract number R305M050121A (Simmons et al., 2005). The fidelity measures were completed before, during, and after the study.

Pretesting was completed the week prior to the study, posttest 1 measures were administered following the six weeks of intervention, and posttest 2 measures were administered six weeks post-intervention. Six test measures were administered in the beginning, four at posttest 1, and three at posttest 2. All test measures were administered by the classroom teacher to maintain an authentic classroom setting and to avoid any differences as a result of strangers administering test measures. Teachers provided the researcher with basic information on the students in a coded format. Designations were made for gender, ethnicity, and placement in any special programs. Not all the measures used were standardized. However, all measures were adapted from previous or current research and/or were created by the principal investigator, teachers, and/or existing district curriculum materials.

Instruments

The tests administered are listed in Table 8.

Table 8

Tests Administered as Pretest, Posttest 1, and/or Posttest 2

Pretests	Posttest 1 – 6 weeks	Posttest 2 – 6 weeks Post-Intervention (12 weeks)
Comprehension	Comprehension	XXX*
Content	Content	XXX*
CBM	CBM	CBM
Checkpoints for Content	Checkpoints for Content	Checkpoints for Content
TORC3 Vocabulary Subtest for Social Studies	XXX*	TORC3 Vocabulary Subtest for Social Studies
TOSCRF**	XXX*	XXX*

*Not given.
**The Test of Silent Contextual Reading Fluency (TOSCRF) was given in the beginning with the pretests to determine approximate reading levels of the students in the study.

Comprehension

The comprehension test used for this study was a previously administered Texas Assessment of Knowledge and Skills passage from 2003. It was an article written about a museum and dinosaurs. Students were required to answer five questions about the article. This was administered as a pretest and again as a posttest 1 after the six-week implementation. According to the Texas Education Agency, these tests are made

available to the public and are allowed for the formative evaluation of Texas students. This passage was reprinted with permission from the Texas Education Agency.

Content

The content test was created to test the content material from alternative textbooks. A text other than the school's adopted text was used to prepare the test. The text material was used with permission from Scott Foresman. Passages were created for all three districts and tested their knowledge regarding natural resources, renewable resources, nonrenewable resources, weather, and climate. They were tested over the same content but in different formats to check their knowledge of the content itself. There were five questions over the state's resources and five questions over weather and climate for a total of ten questions on the content tests. While the questions from the comprehension test were intended to determine a students' ability to read the passages and understand the materials, the content tests allowed for reading of passages and responses to questions specific to their social studies curriculum.

Curriculum-Based Measures (CBM)

The vocabulary matching curriculum-based measure was administered as a pretest, posttest 1 after six weeks, and posttest 2 six weeks post-intervention. The curriculum-based measures were used as a fluency measure for vocabulary. They were timed for five minutes. It was in a matching format with 20 social studies words and their definitions. These curriculum-based measures were adapted from the Teacher Quality Grant (Simmons et al., 2005). They were patterned after the work of Espin, Shin, and Busch (2005), who discussed the importance of measuring change in students.

Typically, measurement is at a single point in time which is evident with achievement testing and other standardized tests measures such as the TAKS. Curriculum-based measurement provides an ongoing data collection system that provides teachers with information on student progress, and in this case, on the progress of the intervention (Espin et al., 2005). Espin et al. completed a study to determine whether or not vocabulary-matching probes could be used as an indicator to determine student learning in social studies. Their conclusion from their research supported the use of these measures. The curriculum-based measures created for this study were formed following their model of five-minute, group-administered, vocabulary matching probes. These outcomes have been supported by other researchers as well (Deno, 1985; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1994; Fuchs & Fuchs, 1998).

Checkpoints for Content

Checkpoints for content is a teacher and researcher created multiple choice exam similar to a unit test. The checkpoints were adapted from the Teacher Quality Grant materials and existing measures from the individual districts. Two fourth-grade teachers from two different districts not associated with the study assisted in preparation of the questions. The intention was to measure for comprehension of specific expository text material. There were 20 multiple choice questions derived specifically from the districts' curriculum. These checkpoints were administered as pretests, posttest 1, and posttest 2.

Test of Reading Comprehension, Third Edition (TORC3)

The TORC3 includes a vocabulary subtest for social studies. For this study, the only portion given of the TORC3 was the vocabulary subtest specific to social studies.

This test was intended to measure the reader's understanding of specific sets of vocabulary related to similar concepts. The subtests are intended to be diagnostic supplements to provide a more comprehensive evaluation of a students' strengths and weaknesses related to content area vocabulary. The TORC3 was standardized on 1,962 students from 19 states. This test was not in a typical format for students. The TORC3 is designed for students to respond with two correct answers. It looks like a regular multiple choice exam, but students must choose two correct responses. Students are not accustomed to this type of test. According to Pearson Education, the TORC3 has all new normative data collected in 1993-1994, along with research supporting criterion and content validity.

Test of Silent Contextual Reading Fluency (TOSCRF)

> According to Hammill, Wiederholt, and Allen (2006), this test:
>
> > measures the speed with which students can recognize the individual words in a series of printed passages that become progressively more difficult in their content, vocabulary, and grammar. The passages that the students are given to read are adapted from passages in the Gray Oral Reading Tests-Fourth Edition (cited in Wiederholt & Bryant, 2001) and the Gray Silent Reading Tests (cited in Wiederholt & Blalock, 2000). (p. 1)

The test has a practice, a two-minute section, and finally, a three-minute section. It requires knowledge of word identification, meaning, sentence structure, and comprehension. It was intended for the purposes of this study to serve as a measure of the students' reading ability. It was administered only in the beginning with the pretest measures. This test was normed on a nationally representative sample of 1, 898 students ranging in ages from 7 years 0 months to 18 years 11 months, each of whom was administered all four forms of the TOSCRF. The TOSCRF is a timed measure in which

students must recognize individual words in a series of printed passages. The passages get progressively more difficult with regard to content and vocabulary.

Data Analysis

A combination of different statistics was used to answer the research questions. The dependent variable in this study was the student outcomes including scores on the pretests, posttest 1 measures, and posttest 2 measures. A preliminary analysis included reliability coefficients of all instruments used in the study. The second section includes difference score analysis and descriptive statistics. Chapter IV will also provide the results of a one-way multivariate analysis of variance (MANOVA). Additionally, a repeated measures MANOVA was completed using the effect for group, effect for time, and effect for group by time or interaction effect. The final analysis includes a plot of the classroom means for five of the instruments used in the study. Descriptive statistics and effect sizes will also be provided. The analyses includes scores from comprehension, content, checkpoints, curriculum-based measures for vocabulary, and TORC3 subtest for social studies vocabulary. A more detailed description of the specific analyses is included in the following chapter.

Summary

The training and implementation of strategies, the use of the social studies content area, and the resulting student outcomes will provide information related to the effectiveness of this multi-component approach. The NRP (2000) stated that a multiple

strategy approach to direct vocabulary instruction was necessary for growth in comprehension. The use of qualitative data including the teacher surveys and the quantitative results demonstrating the differential effect of training and implementation are combined to provide insight related to the effect of the intervention. The methodology used was intended to provide the most comprehensive results providing data for research purposes, in conjunction with useful information for the participating districts.

CHAPTER IV

RESULTS

This chapter presents the results of the study. The statistical analyses that were conducted on the data are reported in four sections. The first section is the preliminary analysis that includes the reliability coefficients of scores on all of the instruments used in the study. The second section, substantive hypotheses, presents several analyses investigating the first and second administration of the tests. This section will also include descriptive statistics, as well as a narrative reporting of the results of a one-way MANOVA and repeated measures MANOVA with the effect for group, the effect for time, and the effect for group interaction. The third section is the ancillary analysis. This provides data plotted for the 29 classrooms on each of the instruments used in the study to illustrate average growth for the students in each of the 29 classrooms. The fourth section provides detailed information regarding fidelity measures.

Twenty-three teachers representing 29 classroom sections participated in the study. The 23 teachers' years of experience ranged from 1-29, with an average of 11 years of experience. Additionally, only 1 teacher had a master's degree, while the other 22 had a bachelor's degree. Twenty-two teachers were Caucasian and 1 was Hispanic, with 2 males and 21 female teachers in the study. The study focused on fourth graders, so the teachers were asked specifically how many years of experience they had in fourth grade. The range was from 1-21, with the average number of years in fourth grade being 7. The teachers were located on five separate campuses in three different school districts.

The gender and ethnicity breakdown of all of the students in the study from both experimental and control groups are listed in Tables 9 and 10 below.

Table 9

Total Gender Distribution

Value	Frequency	Percent	Valid Percent	Cumulative Percent
F	208	55.5	55.5	55.5
M	167	44.5	44.5	100.0
Total	375	100.0	100.0	

Table 10

Total Ethnicity Distribution

Value	Frequency	Percent	Valid Percent	Cumulative Percent
A	67	17.9	17.9	17.9
H	23	6.1	6.1	24.0
O	5	1.3	1.3	25.3
S	2	.5	.5	25.9
W	278	74.1	74.1	100.0
Total	375	100.0	100.0	

Note. A=African American; H=Hispanic; O=Other; S=Asian; W=White.

Preliminary Analysis

A reliability analysis for each of the scores on the instruments was calculated using coefficient alpha, along with item-total statistics for the instruments. According to Pallant (2005), the assessment of internal consistency is a major concern. Pallant (2005) described the importance of determining the degree to which the items "hang together" or establishing if they are measuring the same construct. The following tables show the reliability analysis for the different instruments including the item number, the corrected item-total correlation, and the alpha-if-item deleted. Table 11 and Table 12 provide the reliability analysis for the comprehension test.

Table 11

Reliability Analysis for Comprehension Pretest

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
Comp 1-1	.258	.457
Comp 1-2	.243	.475
Comp 1-3	.286	.443
Comp 1-4	.259	.455
Comp 1-5	.348	.391

Note. The comprehension test consisted of only five items. The alpha for the total scores for 363 students was .500.

Table 12

Reliability Analysis for Comprehension Posttest or Test 1

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
Comp 2-1	.378	.495
Comp 2-2	.382	.506
Comp 2-3	.283	.567
Comp 2-4	.368	.497
Comp 2-5	.311	.529

The posttest was a repeat of the previous comprehension test. There were five items and the alpha for 356 students was .573. As mentioned previously, the comprehension test was a previously released TAKS passage. The five questions were related to the passage, given as a pretest and repeated after six weeks of intervention. Although the comprehension score on the reliability analysis for both the pretest and posttest 1 did not meet the .70 standard, Pallant (2005) described the ideal outcome as being above .7; however, she also noted that with scales fewer than ten items, it is common for values to be around .5. The pretest and posttest for comprehension both fell in the .5 range, rather than .7. Additionally, this particular test was limited in that it had only five questions and was not related specifically to the content being taught during the intervention period of implementation.

The reliability analyses for the content tests follow in Tables 13 and 14.

Table 13

Reliability Analysis for Content Pretest or Test 1

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
ContY 1-4	.512	.653
ContY 1-5	.465	.673
ContY 1-8	.543	.640
ContY 1-9	.456	.676
ContY1-10	.398	.697

Table 14

Reliability Analysis for Content Posttest Y or Test 2

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
ContY 2-1	.712	.816
ContY 2-2	.604	.843
ContY 2-5	.646	.832
ContY 2-8	.683	.823
ContY 2-9	.708	.816

In creating the content test, an alternative text was used in the different classrooms. Two of the three districts used the same text. The third district had a different adoption. The material and the test were based on the same content material. However, the questions varied between pretests and posttests and between the tests given to the first and second districts as opposed to the third district. In order to provide a more valid outcome, the original ten questions were reduced to using only the content questions that were the same. As a result, the five matched questions are presented in the reliability analysis. The outcome for the pretest for two of the districts was an alpha of .716. The matched questions were the questions used for the reliability analysis for the posttest for the two aforementioned districts. The outcome for the content posttest for the two districts was an alpha of .856 for the five total questions.

Tables 15 and 16 represent the outcomes for the content test taken by the third district. The questions were again reduced to those that were matched resulting in five questions. The content B pretest resulted in an alpha of .781 on the five matched questions. The content test for the third district with five questions generated an alpha of the total scores of .886.

Table 15

Reliability Analysis for Content Pretest B or Test 1

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
ContB 1-3	.609	.722
ContB 1-5	.678	.695
ContB 1-6	.621	.717
ContB 1-9	.451	.772
ContB 1-10	.436	.776

Table 16

Reliability Analysis for Content Posttest B or Test 2

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
ContB 2-3	.875	.824
ContB 2-5	.572	.894
ContB 2-4	.825	.837
ContB 2-7	.651	.878
ContB 2-8	.721	.863

The checkpoints for content test was similar to a unit test that could be given over a specific unit taught during a certain time frame in a classroom. In this case, it was intended to resemble a six-week unit test. The checkpoints were designed by the researcher, the teachers, and through the use of some existing content materials adopted by the district. The checkpoints for content consisted of 20 multiple choice questions directly related to the content being taught. The pretest measure was to determine existing knowledge, while the posttest 1 measure at six weeks was intended to demonstrate what students had learned, followed by the posttest 2 measure six weeks post-intervention to determine the rate of retention. Table 17 presents the results of the reliability analysis for the checkpoints pretest.

Table 17

Reliability Analysis for Pretest Checkpoints or Test 1

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
Chk 1-1	.316	.690
Chk 1-2	.322	.690
Chk 1-3	.219	.700
Chk 1-4	.304	.692
Chk 1-5	.294	.693
Chk 1-6	.274	.695
Chk 1-7	.253	.697
Chk 1-8	.040	.715

Table 17 (continued)

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
Chk 1-9	.404	.683
Chk 1-10	.295	.693
Chk 1-11	.184	.702
Chk 1-12	.361	.689
Chk 1-13	.294	.693
Chk 1-14	.335	.689
Chk 1-15	.287	.694
Chk 1-16	.263	.696
Chk 1-17	.366	.686
Chk 1-18	.192	.703
Chk 1-19	.296	.693
Chk 1-20	.201	.701

The alpha for the pretest checkpoints for content with 20 items was .706. The results of the reliability analysis for checkpoints posttest 1 are listed in Table 18.

Table 18

Reliability Analysis for Posttest Checkpoints or Posttest 1

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
Chk 2-1	.493	.776
Chk 2-2	.271	.789
Chk 2-3	.325	.786
Chk 2-4	.249	.791
Chk 2-5	.347	.785
Chk 2-6	.354	.784
Chk 2-7	.480	.776
Chk 2-8	.288	.789
Chk 2-9	.423	.782
Chk 2-10	.429	.780
Chk 2-11	.360	.784
Chk 2-12	.404	.783
Chk 2-13	.368	.783
Chk 2-14	.586	.770
Chk 2-15	.397	.782
Chk 2-16	.391	.782
Chk 2-17	.432	.781
Chk 2-18	.007	.805
Chk 2-19	.456	.777
Chk 2-20	.163	.797

The first posttest, which was given after six weeks of intervention, revealed an alpha of .793 for the 20 items. The results of the third test, given six weeks post-intervention, or the posttest 2, are presented in Table 19. The alpha for the posttest 2, or six weeks post-intervention, was .800 for 20 items and 340 students.

Table 19

Reliability Analysis for Posttest Checkpoints or Posttest 2

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
Chk 3-1	.508	.783
Chk 3-2	.287	.796
Chk 3-3	.330	.794
Chk 3-4	.337	.793
Chk 3-5	.342	.793
Chk 3-6	.469	.786
Chk 3-7	.413	.789
Chk 3-8	.354	.793
Chk 3-9	.475	.787
Chk 3-10	.383	.791
Chk 3-11	.305	.796
Chk 3-12	.448	.791
Chk 3-13	.417	.789

Table 19 (continued)

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
Chk 3-14	.532	.782
Chk 3-15	.383	.791
Chk 3-16	.369	.791
Chk 3-17	.461	.787
Chk 3-18	.041	.810
Chk 3-19	.492	.784
Chk 3-20	.125	.806

The CBM or Curriculum-Based Measure is a 20-question vocabulary matching test. The vocabulary words are those that were part of the content instruction. The words were tested prior to the intervention instruction, at the end of the intervention instruction, and then at six weeks post-intervention. Why use curriculum-based measurement in content areas? The importance for teachers in evaluating students' performance over time has been studied by a number of authors (Espin et al., 2005; Francis et al., 1994; Fuchs & Fuchs, 1998). These authors have demonstrated and reported that the use of curriculum-based measures has given teachers an opportunity to evaluate student progress and modify their instruction accordingly. According to Espin et al. (2005), the results of their study supported the use of vocabulary matching probes to demonstrate

student learning in social studies. Espin et al. described the measure and its use as "an indicator of student performance and progress over time in social studies. This measure can be administered to students in groups, takes only five minutes to administer, and can be scored relatively quickly" (p. 361). The curriculum-based measure was exactly as described. It was a five-minute vocabulary matching test containing vocabulary words specific to the content material. The pretest reliability analysis for the curriculum-based measure is presented in Table 20.

Table 20

Reliability Analysis for Pretest CBM or Test 1

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
CBM 1-1	.112	.771
CBM 1-2	.274	.762
CBM 1-3	.380	.755
CBM 1-4	.352	.757
CBM 1-5	.399	.753
CBM 1-6	.276	.764
CBM 1-7	.125	.769
CBM 1-8	.280	.762
CBM 1-9	.392	.754

Table 20 (continued)

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
CBM 1-10	.388	.754
CBM 1-11	.359	.757
CBM 1-12	.225	.765
CBM 1-13	.425	.752
CBM 1-14	.389	.754
CBM 1-15	.331	.758
CBM 1-16	.541	.741
CBM 1-17	.171	.767
CBM 1-18	.448	.749
CBM 1-19	.389	.755
CBM 1-20	.237	.766

Table 20 represents the pretest vocabulary measure with 20 items and a total alpha of .768. Table 21 results for the first posttest curriculum-based measure are provided in the following table.

Table 21

Reliability Analysis for Posttest CBM or Posttest 1

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
CBM 2-1	.529	.915
CBM 2-2	.653	.912
CBM 2-3	.558	.914
CBM 2-4	.527	.915
CBM 2-5	.608	.913
CBM 2-6	.299	.919
CBM 2-7	.618	.913
CBM 2-8	.584	.913
CBM 2-9	.492	.916
CBM 2-10	.610	.913
CBM 2-11	.550	.914
CBM 2-12	.624	.913
CBM 2-13	.630	.912
CBM 2-14	.600	.913
CBM 2-15	.558	.914
CBM 2-16	.646	.912
CBM 2-17	.615	.913
CBM 2-18	.460	.916
CBM 2-19	.628	.912
CBM 2-20	.624	.913

The alpha for the 20-question CBM 2, or posttest 1, was .9181. Table 22 presents the results of the CBM posttest 2 given six weeks post-intervention.

Table 22

Reliability Analysis for Posttest CBM or Posttest 2

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
CBM 3-1	.560	.921
CBM 3-2	.663	.918
CBM 3-3	.614	.919
CBM 3-4	.605	.920
CBM 3-5	.638	.919
CBM 3-6	.370	.924
CBM 3-7	.586	.920
CBM 3-8	.582	.920
CBM 3-9	.572	.920
CBM 3-10	.589	.920
CBM 3-11	.483	.922
CBM 3-12	.605	.920
CBM 3-13	.576	.920
CBM 3-14	.627	.919
CBM 3-15	.616	.919
CBM 3-16	.662	.918
CBM 3-17	.643	.919
CBM 3-18	.480	.922
CBM 3-19	.618	.919
CBM 3-20	.668	.918

The reliability analysis for the CBM 3, or six weeks post-intervention, revealed an alpha of .924 with 20 test questions. Table 23 provides the reliability analysis for the pretest for TORC3 subtest for social studies vocabulary.

Table 23

Reliability Analysis for Pretest TORC3

	Item-Total Statistics	
Item	Corrected Item-Total Correlation	Alpha-if Item Deleted
TORC 1-1	.268	.758
TORC 1-2	.435	.749
TORC 1-3	.409	.752
TORC 1-4	.319	.755
TORC 1-5	.428	.749
TORC 1-6	.254	.758
TORC 1-7	.433	.748
TORC 1-8	.250	.758
TORC 1-9	.266	.757
TORC 1-10	.333	.753
TORC 1-11	.367	.751
TORC 1-12	.284	.756
TORC 1-13	.080	.767
TORC 1-14	.321	.754

Table 23 (continued)

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
TORC 1-15	.435	.745
TORC 1-16	.257	.758
TORC 1-17	.341	.752
TORC 1-18	.405	.747
TORC 1-19	.254	.759
TORC 1-20	.287	.755
TORC 1-21	.290	.756
TORC 1-22	.128	.766
TORC 1-23	.226	.760
TORC 1-24	.379	.749
TORC 1-25	.209	.761

The TORC3 had a vocabulary subtest that provided opportunity for determining background knowledge and looked at the terminology specific to social studies. An alpha of .762 for 25 items was obtained. Table 24 provides the reliability analysis for the posttest TORC3.

Table 24

Reliability Analysis for Posttest TORC3 or Posttest 3

Item	Item-Total Statistics	
	Corrected Item-Total Correlation	Alpha-if Item Deleted
TORC 3-1	.487	.849
TORC 3-2	.607	.847
TORC 3-3	.516	.848
TORC 3-4	.470	.848
TORC 3-5	.473	.848
TORC 3-6	.536	.848
TORC 3-7	.602	.845
TORC 3-8	.560	.847
TORC 3-9	.463	.847
TORC 3-10	.496	.846
TORC 3-11	.567	.845
TORC 3-12	.372	.850
TORC 3-13	.347	.851
TORC 3-14	.428	.848
TORC 3-15	.510	.845
TORC 3-16	.322	.853
TORC 3-17	.498	.845
TORC 3-18	.463	.847
TORC 3-19	.355	.851
TORC 3-20	.438	.848
TORC 3-21	.301	.854
TORC 3-22	.289	.854
TORC 3-23	.284	.854
TORC 3-24	.463	.847
TORC 3-25	.181	.858

The TORC 3 was a different type of test for the students. It required identifying two correct responses. This was a vocabulary subtest of the Test of Oral Reading Comprehension 3. This test was given as a pretest and again as a posttest 2, or six weeks post-intervention. The reliability analysis for the TORC 3 revealed an alpha of .854 for 25 questions.

Of the five measures administered during the course of this study, only the comprehension pretest and posttest 1 fell below .70. The other measures ranged from .706 for the pretest checkpoints to .924 for the CBM posttest 2.

Substantive Hypotheses

Due to the number of test measures and the frequency of testing within a reasonably short period of time, the test measures were not all given at the same time periods. As demonstrated in Table 8 in Chapter III, measures were administered at three separate points throughout the study. The first time was a pretest, followed by a six weeks posttest 1 and a 12 weeks, or six weeks post-intervention, posttest 2. Five of these tests were administered as a pretest, along with the Test of Silent Contextual Reading Fluency, used only as a pretest measure to determine students' current reading levels. The content and comprehension measures were administered as pretest and posttest 1 measures. The checkpoints for content were used at all three time intervals, as also were the curriculum-based vocabulary measures. These two were the greatest indicators of basic knowledge regarding the specific content material used for instruction and the retention of that knowledge and the meanings of the vocabulary over time. Therefore, of

the five repeated measures, two were given pre and post 1, while two were given at all three intervals. The TORC3 subtest for vocabulary was administered at pretest and posttest 2 only. It was not given at the six weeks point, or the posttest 1, administration. It would not have provided additional information regarding the specific vocabulary and content for the purpose of this study.

Change Score Analyses

As a result of the way some testing measures were administered at different intervals, there were several types of analyses. The difference is related to the way the tests were administered. Reviewing the time one and time two scores, there is a total score and a difference score. The difference scores are presented in the change score (posttest minus pretest) analysis provided in Tables 25-28.

Table 25

Change Score Analysis of Differences in Comprehension for Control Group, Experimental Group, and Entire Sample

Group	Mean	Standard Deviation	n
Control	.067	1.281	134
Experimental	.139	1.190	180
Entire Sample	.108	1.228	314

Note. The comprehension test involved five questions and was given as a pretest and posttest 1 measure.

Table 26

Change Score Analysis of Differences in Content for Control Group, Experimental Group, and Entire Sample

Group	Mean	Standard Deviation	n
Control	.769	1.471	134
Experimental	1.367	1.460	180
Entire Sample	1.111	1.492	314

Note. The content test involved five matched questions and was given as a pretest and a posttest 1 measure.

Table 27

Change Score Analysis of Differences in Checkpoints for Content for Control Group, Experimental Group, and Entire Sample

Group	Mean	Standard Deviation	n
Control	2.455	3.294	134
Experimental	2.806	3.042	180
Entire Sample	2.656	3.152	314

Table 28

Change Score Analysis of Differences in Curriculum-Based Measures (CBM) for Control Group, Experimental Group, and Entire Sample

Group	Mean	Standard Deviation	n
Control	4.052	4.586	134
Experimental	9.406	4.185	180
Entire Sample	7.121	5.098	314

Descriptive Statistics

A one-way multivariate analysis of variance (MANOVA) was performed to investigate whether or not there were statistically significant results related to the intervention with respect to the three change scores. The first test was that of the group effect with a Wilks' lambda value of .711 with $p < .001$. The multivariate η^2 was .289.

The means and standard deviations for the experimental group, control group, and the entire sample are presented in Table 29. The checkpoints for content and the curriculum-based measures were both administered at all three time points. These means were all positive and indicated that on every measure, the posttest means were greater in the experimental group.

These means were analyzed using a repeated measures MANOVA. The tests that were administered twice provided the following results. Involving between-subjects effects, the value of Wilks' lambda was .808 with $p < .001$ with a multivariate η^2 of .192.

The effect of time produced a value of .140, for treatment group, $p < .001$, with a resulting multivariate η^2 of .860. Evaluating the effect of the group by time, Wilks' lambda had a value of .712, $p < .001$, with a multivariate η^2 of .288.

Table 29

Means and Standard Deviations for the Experimental Group, Control Group, and the Entire Sample

Test Measures	Group	Means	Standard Deviations	n
Checkpoints for Content 1 Pretest	Control	11.000	3.565	125
	Experimental	11.366	3.454	191
	Entire Sample	11.222	3.497	316
Posttest 1	Control	13.376	3.881	125
	Experimental	14.131	3.935	191
	Entire Sample	13.832	3.925	316
Posttest 2	Control	13.016	4.245	125
	Experimental	14.393	3.653	191
	Entire Sample	13.848	3.949	316
Curriculum-Based Measures Pretest	Control	4.528	3.442	125
	Experimental	4.141	3.227	191
	Entire Sample	4.294	3.314	316
Posttest 1	Control	8.632	5.613	125
	Experimental	13.267	5.463	191
	Entire Sample	11.434	5.963	316
Posttest 2	Control	8.968	6.023	125
	Experimental	13.215	5.655	191
	Entire Sample	11.535	6.156	316

Repeated measures MANOVA was also used for the two measures that were administered as a pretest, posttest 1, and posttest 2. The following were the results of the tests administered three times. The Wilks' lambda for the between-subjects intervention effect was .736 with $p < .001$ with a multivariate η^2 of .264. The effect of time produced a

value of .106, $p < .001$, with a resulting multivariate η^2 of .893. Evaluating the effect of the group by time, Wilks' lambda had a value of .816, $p < .001$, with a multivariate η^2 of .184. In this study, a nested structure, common in educational research, exists that looks at students nested within classrooms within schools.

Ancillary Analysis

There were 29 total classrooms. For each of the five instruments used as testing measures, a plot was constructed of the classroom means (See Figures 1-5). This offered the opportunity to view the study through a visual representation of the intervention impacts at the classroom level. The dotted lines on the figures represent the control classrooms, while the solid lines represent the experimental classrooms. The teachers are coded according to their group participation, their assigned teacher number, and their assigned classroom number. The testing times refer to one, two, or three. One is the pre-test, two the posttest 1, or following six weeks of intervention, and three represents the posttest 2, or six weeks post-intervention. The number of questions on the test, each scored "0" for wrong and "1" for right, ranged from 5 to 25. These are listed on the vertical axis. The vertical scale was adjusted to allow the best view of the plotted information. Testing times one, two, and/or three are found on the horizontal axis.

Five figures are listed below representing the different classrooms involved in the study. The first plot is shown in Figure 1. This was the comprehension measure of five questions using a previously released TAKS passage. Of the 14 control classrooms, 8

showed gains, 2 remained exactly the same, and the other 4 decreased. Of the 15 experimental classrooms, 14 showed gains and only 1 decreased.

Figure 2 represents the content test administered at two time periods that again showed gains by all classes with a difference in the experimental group. Of the 14 control classrooms, 13 showed a gain and 1 decreased. All of the 15 experimental classrooms showed gains.

Figure 3 represents the checkpoints for the content test administered at three separate times. For this test, 2 of the control classrooms showed no gain and actually went down in terms of the mean of the outcomes for the three tests. The average gains for the control group varied from -.55 to +4.20. The experimental group all increased and showed average gains from 1-5 points.

Figure 4 shows the means for each classroom on the curriculum-based measures administered on three occasions. The control classrooms had two that showed no gain and were negative in terms of the means from the three administrations of this test. The gains ranged in the control group from -.85 to 8.72. The experimental group had no decline and the average gains ranged from 4.67 to 11.67.

Figure 5 represents the TORC3 social studies vocabulary subtest. In each case, the experimental group showed greater gains than the control group. Of the 14 control groups, 4 decreased and in the experimental group, only 2 decreased.

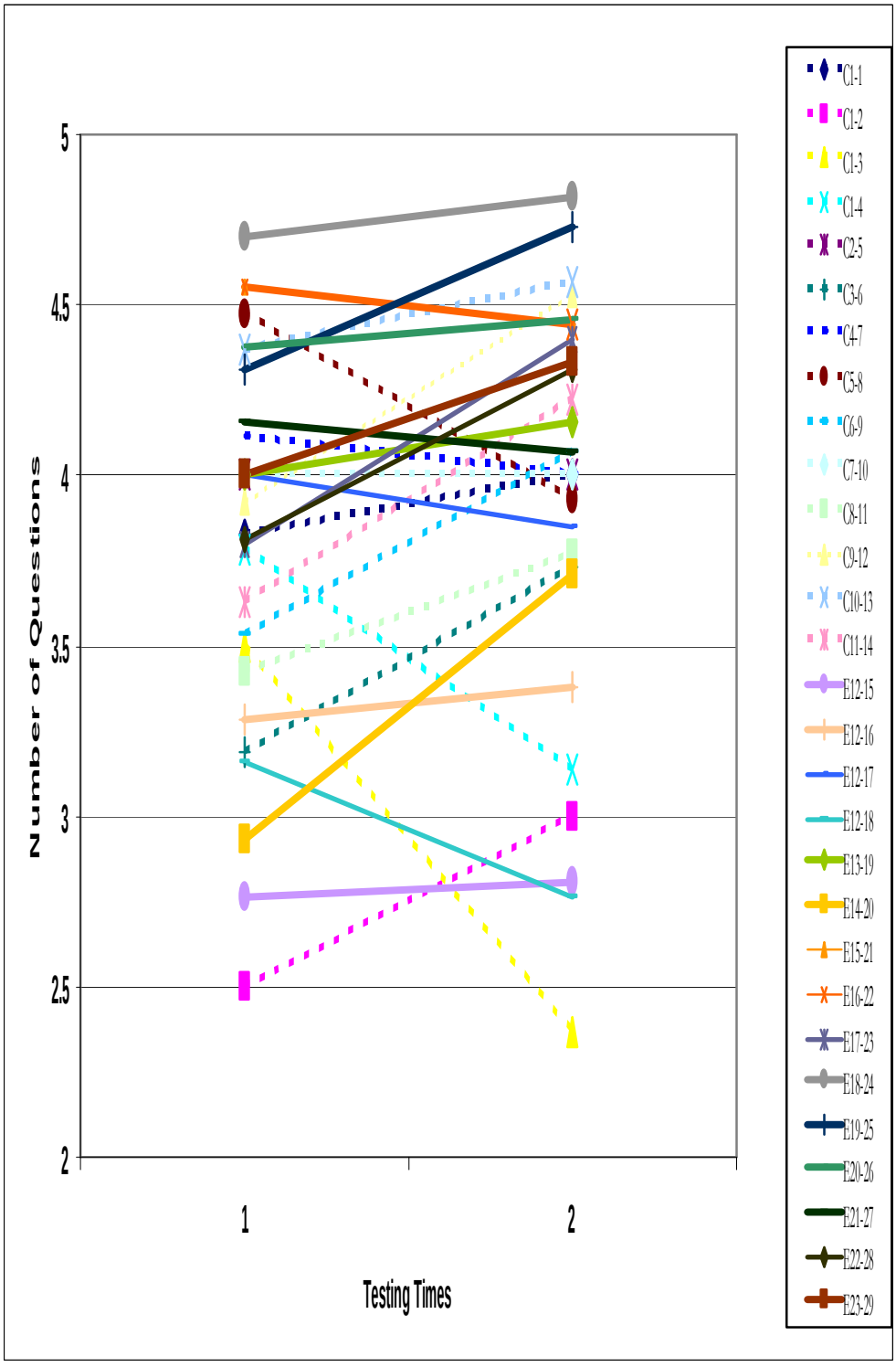

Figure 1. Intervention Impact Through Classroom Means for the Comprehension Test Administered as a Pretest and Posttest 1 to Experimental and Control Groups

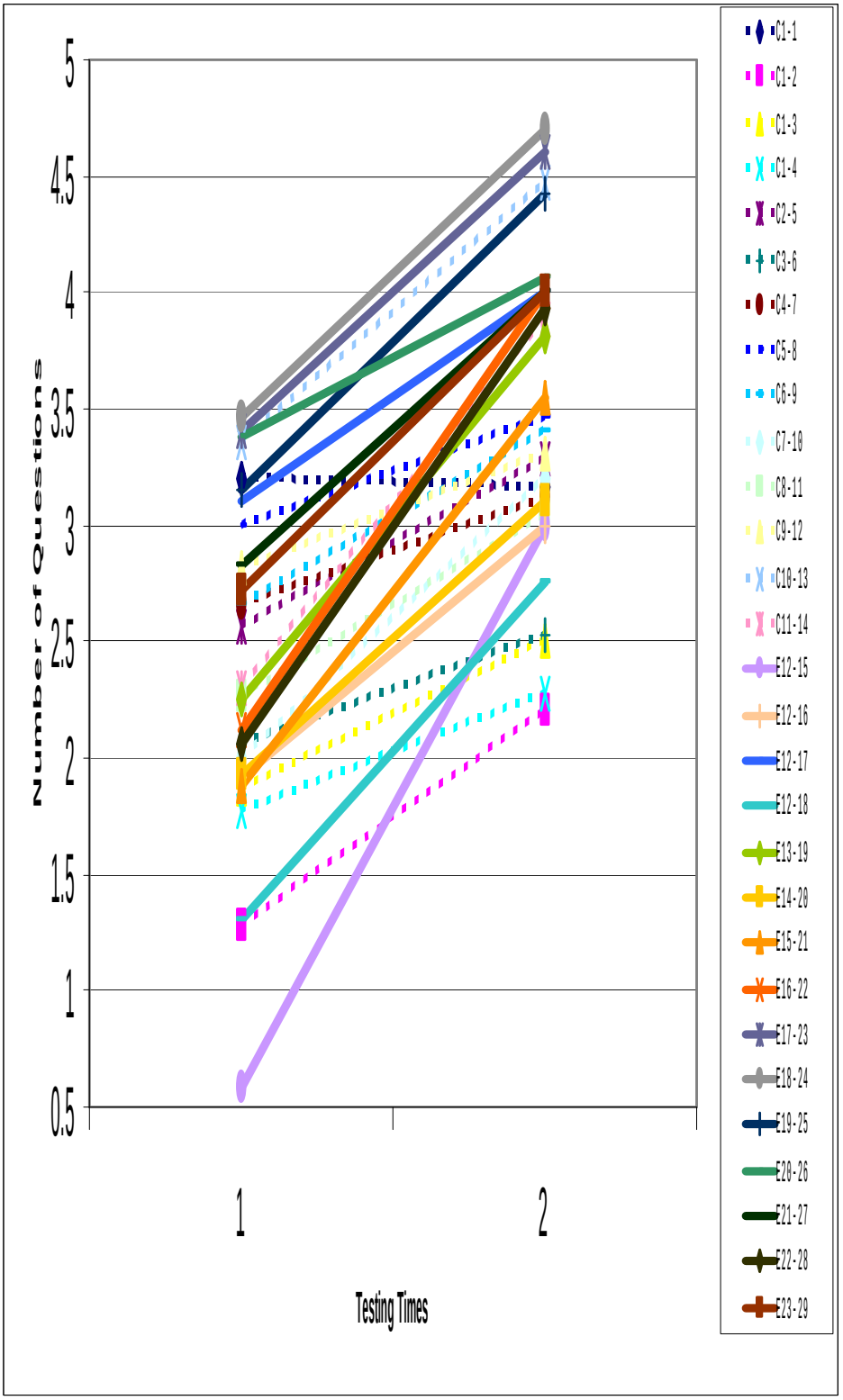

Figure 2. Intervention Impact Through Classroom Means for the Content Test Administered as a Pretest and Posttest 1 to Experimental and Control Groups.

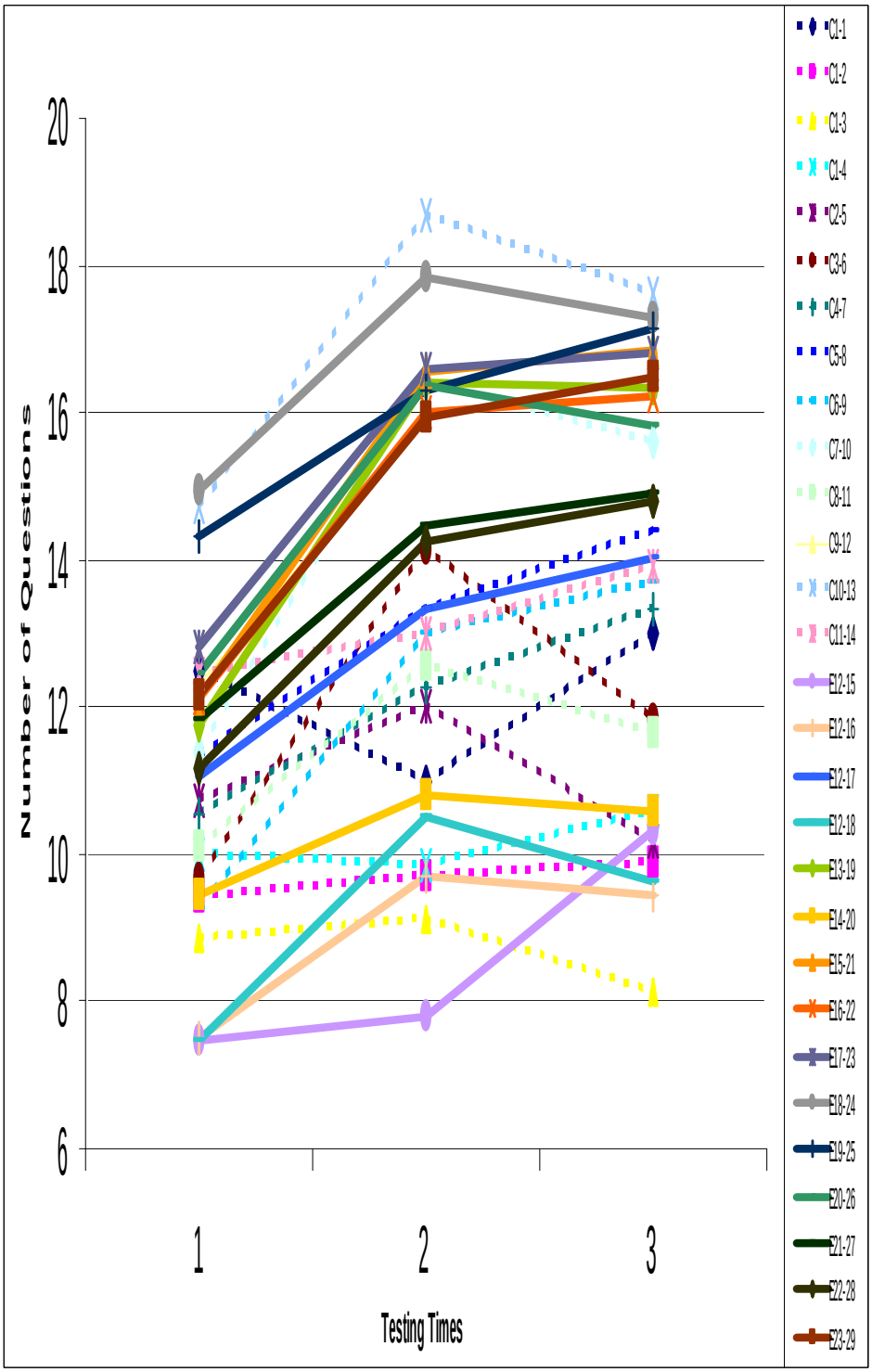

Figure 3. Intervention Impact Through Classroom Means for the Checkpoints for the Content Test Administered as a Pretest, Posttest 1, and Posttest 2 to Experimental and Control Groups.

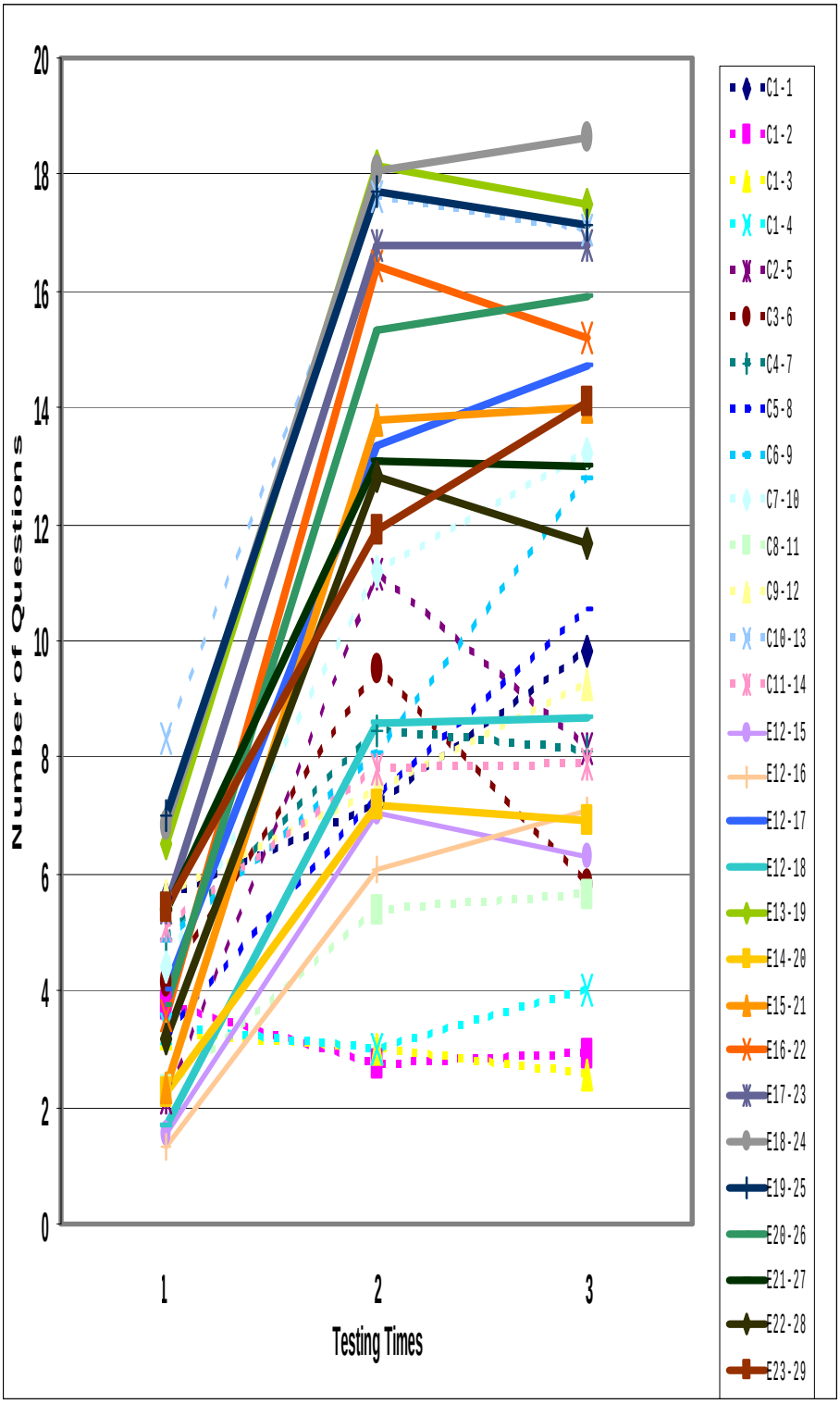

Figure 4. Intervention Impact Through Classroom Means for Curriculum-Based Measurement Test Administered as a Pretest, Posttest 1, and Posttest 2 to Experimental and Control Groups.

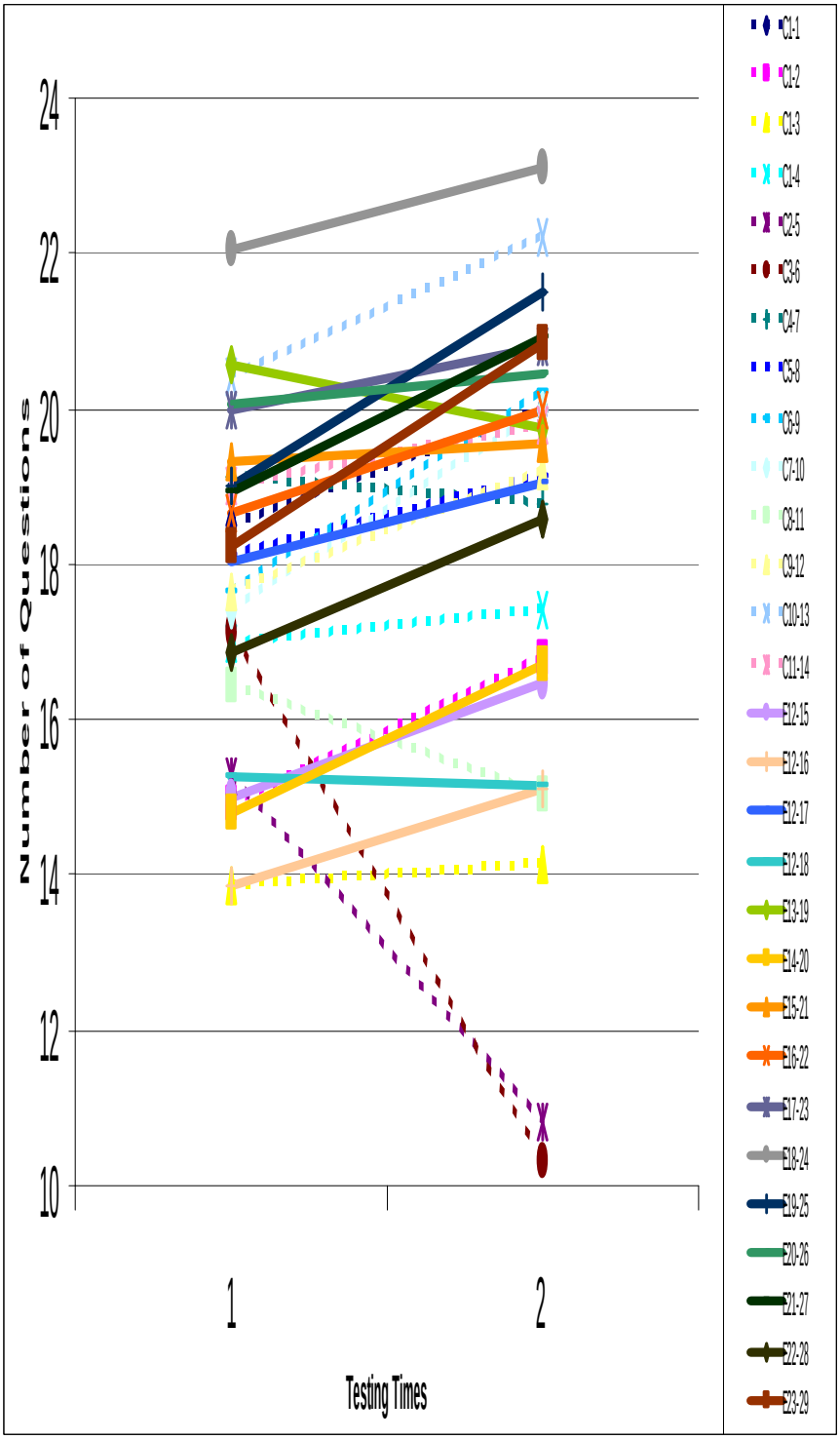

Figure 5. Intervention Impact Through Classroom Means for TORC3 Social Studies Vocabulary Subtest Administered as a Pretest and Posttest 2 to Experimental and Control Groups.

Table 30 lists the topics and number of categories used to evaluate fidelity of implementation. Comprehension included seven specific entries encompassing what teachers did before, during, and after reading strategies. Strategies included (a) activation of prior knowledge including text previews and information regarding title, author, and connections of relevant content; (b) the use of text features; (c) the use of text structure identifying compare/contrast, cause and effect, or problem/solution; (d) explicit instruction including strategies for main idea, summarizing, drawing conclusions, visualizing events, evaluating predictions, fact and opinion, and sequencing or monitoring for comprehension; (e) asking students to justify or elaborate on their responses; (f) teacher asking questions based on text material requiring the need for inferencing or other complex skills; and (g) teacher elaboration or clarification of concepts during text reading.

Vocabulary ratings incorporated seven instructional strategies including (a) activation of prior knowledge based on semantic mapping or semantic feature analysis, (b) teacher-provided explanation of a definition or an example, (c) teacher elaboration or extension of a definition, for example teaching multiple meanings or paraphrasing of student responses, (d) the use of visuals, pictures, or demonstrations during discussion of word meanings, (e) use of word learning strategies such as context clues, word parts, or the meaning of roots, (f) student demonstration that required knowledge of words through some of the aforementioned activities, or (g) teacher assigning or working with students specifically on application of word learning strategies that had been taught previously.

Grouping arrangements and text reading were coded every 15 minutes during the observation and were divided into six categories. Instruction by the teacher was either (a) whole class, which was identified as greater than 75% of the students enrolled in the class, (b) large group, which included 6 or more students but less than 75%, (c) small groups, including 3-6 students, (d) pairs, (e) individuals, or (f) no direct student contact observed during the 45-minute time period. Thirteen different possibilities were listed in a checklist format for materials used during the observation. The thirteenth was an "other" category where the observer could write in any materials not on the checklist.

Intervention instruction was used to record the actual implementation of the experimental curriculum. Fifteen possible categories were listed to include all of the different parts of the curriculum and were marked for presence or absence during the observation. These fifteen categories included (a) chapter overview introduction, (b) explanation of chapter overview, (c) using the chapter overview as the text is read, (d) key explicit vocabulary word instruction, (e) explanation of vocabulary maps, (f) completion of vocabulary maps, (g) checking vocabulary maps, (h) use of points, (i) assigning homework or checking homework, (j) use of WIN, a writing procedure using vocabulary words, (k) completion of summary statements, (l) implementation of Ready, Set, Go game, (m) use of Down and Across, (n) use of the curriculum-based measure for assessment, and/or (o) another form of assessment during observed instruction. Additionally, the rating included whether or not the implementation observed was for none of the time, part of the time, or all of the 45-minute time period.

Finally, the features of instruction included seven categories as well and focused on (a) accurate and focused explanations or feedback, (b) correction or addressing specific errors, (c) active participation during teacher-led instruction, (d) effective pacing for this age group with the curriculum, (e) effective use of chapter overview, (f) effective management of student study teams, and (g) use of writing activities in response to reading.

The final eight items on the checklist were specific to the quality and quantity of instruction, classroom management, and student engagement. Experimental and control classrooms were observed each week by one of five observers. Sixteen classroom sessions were observed for reliability. Table 30 includes the number of items observed related to each of the topics listed. Table 31 presents percentage of agreement between raters in each of the categories. The agreement was calculated based on a total of 51 items. The items were matched exactly and given a 0 for not observed and a 1 for observed. The number of differences were totaled and then divided to determine the percentage. If there were 10 items marked differently, the percentage was derived by 51-10 =41/51 x 100=80%.

Table 30

Checklist Topics Included for Ensuring Fidelity of Implementation

Topics	Number of Categories
Comprehension	7
Vocabulary	7
Grouping Arrangements and Text Reading	6
Materials Used	1
Intervention Implementation	15
Effective Instruction	15
Total Categories	51

For the purposes of this study, fidelity observations are restricted to a subset of the observations conducted. Table 31 lists the percentages of agreement between the researcher and the rater for each of the following eight teachers.

Table 31

Percentage of Agreement Between Researcher and Raters Listed by Teacher, Control or Experimental Designation, and District

Teacher	Agreement (%)	Control (C) or Experimental (E)	District
1	90	E	Y
2	80	C	R
3	88	C	Y
4	88	E	B
5	82	C	R
6	80	E	R
7	84	C	Y
8	88	E	Y

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study focused on the need for research in the area of vocabulary instruction. In particular, fourth grade students were selected for multi-component strategy instruction in their social studies classrooms. According to Bromley (2007), teaching vocabulary well is a key aspect of developing engaged and successful readers. Additionally, Nagy and Scott (2000) described word meanings as making up as much as 70-80% of comprehension. The importance of vocabulary was well-documented; the existence of intervention studies to support the importance of intense vocabulary instruction was not. The NRP (2000) emphasized that vocabulary learning was effective if students were actively engaged in their learning. The curriculum for this study was designed to actively engage students and to reinforce retention of word meanings in isolation as well as in context.

Research Questions

Research Question 1

The first question was: "What is the effect of multi-component vocabulary instruction on fourth grade students' social studies vocabulary and comprehension performance during a six-week period?" While we know that vocabulary instruction was some part of each teacher's instruction, the extent to which teachers were using vocabulary knowledge to improve student engagement and student comprehension was unknown as we began the study. How many teachers actually emphasized the

understanding of words and word knowledge as they delved into the content areas with their students? The concept of the fourth grade slump described by Chall and Jacobs (2003) gave reason to investigate fourth graders and to examine the teachers' implementation of an intervention with multiple strategies for teaching vocabulary. Teachers were provided with the materials and training to implement the instruction and did so for a period of six weeks. As with any other curriculum materials, some parts were well-received, while other parts proved to be less valuable in the eyes of the teachers involved in the study.

What was the effect of multi-component vocabulary instruction for these fourth grade students? First, the alpha score for the reliability analysis for all of the testing measures with the exception of comprehension was above the .7 standard. The comprehension test consisted of only five questions. In addition to the brevity of the comprehension test, six weeks of time is a brief period of time to demonstrate a change in terms of comprehension. The outcome for this particular test was not surprising considering the reasons previously mentioned. All other measures administered ranged from .706 to .924, which provides merit to the testing procedures for the students who were involved in the study.

The graphs in Figures 1-5 in Chapter IV present a visual representation of the means for each class involved and for each testing measure over time. The testing times are located on the horizontal axis and the number of questions answered correctly on the vertical axis. These line graphs indicated that the testing measures demonstrated student growth that was evident in almost every classroom including both experimental and

control classrooms (see Figures 1-5). However, with each measure, the gain was consistently greater overall with the experimental classrooms.

Figure 1 represents the results of the comprehension test. The key on the right side of the paper indicates C if the class was a control group and E if the class was an experimental group. The numbers that run from 1-23 are related to the teachers, and the numbers from 1-29 represent the sections of classroom students. Recall that one teacher had four sections of control students and another had four sections of experimental students. In reviewing the lines on the figures, the dotted lines represent the control group and the solid lines represent the experimental group. Figure 2 represents the content test. Again, as in Figure 1, the trend is for the experimental group to show greater gains.

One item worth noting is that the teacher represented by C 10-13, tends to gravitate in every graph toward the top. This particular teacher was in our control group and is a gifted and talented teacher. She consistently demonstrated a strong performance in terms of presentation of content and vocabulary to her students. To clarify, teachers in all cases identified students who were classified as gifted and talented and/or participants in any other special program. It was made clear to the districts that no students should be identified as gifted and talented unless they were actually labeled as such by the district. In many cases, districts create a gifted and talented class and put their classified students in the class. Since the numbers of students who are classified as gifted and talented are relatively small, many districts elect to include high-performing students in with these students to allow them to work with others progressing at a similar rate of speed. This

results in the gifted and talented class. Another campus had a gifted and talented class patterned in a similar fashion, and the teacher represented by E 19-25 performed slightly lower in every case as compared to C 10-13. Both of these classes, in terms of overall scores and individual classes, remained at the higher levels throughout the study representing higher-achieving students in terms of the overall scores.

The checkpoints for content test were noteworthy. The growth for the experimental group hovered above the control group in the majority of the classrooms. Even the lowest scoring classroom showed an improvement of approximately 3.5 points from the first administration to the third administration. This particular test was focused on the content and contained 20 questions directed at specific content and related vocabulary responses. Responses allowed for a combination of understanding related to the specific content taught in conjunction with a knowledge and understanding of the meaning of specific vocabulary words taken directly from the content.

The curriculum-based measures tests showed a clear advantage to the experimental group. The only control class that scored close to the top of the experimental group was the previously mentioned teacher who works with the high-performing students. This test was specific to vocabulary. The students in the experimental group were exposed to instructional strategies that emphasized the use of words and offered repetition in terms of exposure to the words. Vocabulary maps and word journals allowed for extension of knowledge well beyond a simple definition. Content reviews included information using the vocabulary words. Games and activities were provided for teachers to allow students to use the words and to participate in

practice regarding remembering definitions and using words correctly. There should have been a clear difference assuming the control teachers were not teaching the intended curriculum for the intervention. Monitoring the classrooms offered insight into the difference in the quality and quantity of vocabulary instruction. Classroom observations were conducted for a minimum of 45 minutes per week. The researcher observed with each of the other observers in a control and an experimental classroom. In every case, 80-90% of the observations were the same. This particular test, along with the checkpoints for content, was where some difference could be expected based on the nature of these testing measures, if a difference were going to exist.

The TORC3, which is a standardized test measuring vocabulary knowledge, is in a different format than the students were accustomed to and showed improvement as well. Although this was an unusual test for the students, the majority of the students in the study consistently scored at a higher level. It should be noted that when referring to the majority consistently scoring at a higher level, this interpretation is based on the means for each classroom and each administration.

This particular study, which included a diversity of students through schools, districts, campuses, male and female participants, and some ethnic diversity, did demonstrate a difference in vocabulary, content, and comprehension. How significant was the difference? An administrator, in discussion about the study, reflected on the importance of even a small difference for the student and for the school. However, if there is a difference over a six-week period, what might the results show over a longer period of time? The value of using multiple instructional strategies and emphasizing

vocabulary in the classroom was proven in this study to be effective for students and worth pursuing further study in the future.

Research Question 2

Research question two examined whether or not there was a differential increase in student acquisition and maintenance of vocabulary six weeks post-intervention.
If we teach our students using multi-component instructional strategies, the obvious question for an administrator or teacher would be: “Will it make a difference in student learning?” The second question becomes whether or not students retain the information. If we spend our time elaborating and delving deeper into this area in terms of instruction, administrators and teachers will not be pleased with using an intervention that proves helpful in the short term but lacking for long-term retention. Thus, it was important to administer a measure that would offer some insight as to whether or not one, these same students in the experimental group were retaining the information, and two, where students stand in comparison to those in the control group receiving instruction in a more traditional manner.

Two tests were administered to provide an answer to this question. The checkpoints for content test and the curriculum-based measures test were administered at the pretest, posttest 1, and posttest 2. These represent before the intervention, at six weeks, and again at 12 weeks. To demonstrate the difference, the mean for each administration of the two tests is listed below in Table 32.

Table 32

Checkpoints for Content and CBM Means and Standard Deviations at Testing Times 1, 2, and 3 for Experimental and Control Groups

Testing Measure	Means (SDs) 1	2	3
Checkpoints for Content			
Experimental	11.36 (3.45)	14.13 (3.93)	14.39 (3.65)
Control	11.00 (3.56)	13.37 (3.88)	13.01 (4.24)
CBM			
Experimental	4.14 (3.22)	13.26 (5.46)	13.21 (5.65)
Control	4.52 (3.44)	8.63 (5.61)	8.96 (6.02)

The experimental group showed greater gains in both the checkpoints for content as well as the curriculum-based measures. In the actual vocabulary measure, the curriculum-based measure (CBM), there was a significant difference in both learning the words and in retention. Both groups retained the information, but the number of words they retained was higher in the experimental group. The TORC3 was also administered in the beginning and at 12 weeks. The experimental group performed significantly better than the control group.

Summary of Important Findings

Despite the lack of empirical support (NRP, 2000) for the implementation of intensive vocabulary instruction in classrooms, this study contributed to the sought-after base of knowledge regarding vocabulary instruction. This study clearly demonstrated

that even in a six-week period of time, students showed improvement in the classrooms where a multi-component vocabulary instructional strategies approach was utilized.

To provide a glimpse of teacher thinking and strategies prior to the implementation, teachers answered some questions regarding their teaching, the use of specific instructional strategies, and participated in an activity related to a student passage about railroads and Texas. The questions about their teaching were intended to provide insight into instructional strategies they felt comfortable with and used frequently in their classrooms. They were asked to take this passage of approximately 275 words and choose the words they felt would be necessary to teach their students before reading the passage in order to have the students understand what they were reading. Of the approximately 275 words, 32 were chosen as significant. Different words were chosen by different teachers, but there were as few as 7 and as many as 17 chosen by one teacher. This brings to light a whole new dimension, in that choice of words for teaching could be important as well and teacher differences would obviously affect student learning. The focus for this study was on what strategies would be most effective in contributing to vocabulary and comprehension development. The strategies listed below were the strategies that teachers were asked to comment on regarding their level of familiarity and/or their use of them in their daily instructional practices. It is interesting to note these questions were asked prior to the implementation of this study, and they were asked of both experimental and control teachers. The instructional strategies teachers were asked about are listed in Table 33.

Table 33

Instructional Strategies Used by Experimental and Control Teachers

Instructional Strategies
Anticipation guides
Building background knowledge
Comprehension monitoring
Concept map
Explicit instruction of vocabulary
Finding main ideas
Graphic organizers
Guided reading
KWL charts
Levels of questions
Predictions
Re-reading
Semantic feature analysis
Setting purposes
Study guides
Summarizing
Text preview
Think alouds
Underline/use of highlighter
Context clues
Word maps
Word sorts
Students working in pairs, teams, or groups
Learning log

According to the teachers, the strategies most likely to be used included building background knowledge, explicit instruction of vocabulary, and the use of context clues. The list of words that the teachers identified as important for teaching from the social studies passage included the words listed in Table 34.

Table 34

Identified Vocabulary Words Selected for Instruction From a Particular Passage by Experimental and Control Teachers

Identified Vocabulary Words
impact
economy
newcomers
immigrants
population
junction
locomotives
meatpacking
stockyards
cowtown
hub
depot
vibrant
consequence
constructed
variety
trade
depart
rail lines
goods
growing state
vibrant
train station
countries
attracted
instance
laid
railroads
newcomers
markets
Texas

The words that received five or more teacher responses are listed below in Table 35. Only 7 of the 32 words were identified by more than five of the teachers. The

curriculum in the study introduced a set of 4-6 words each week and focused on a total of 20 words for the six-week period. Each week, different words were chosen for elaboration. These words were originally identified as the words that were critical to understanding the passages in their textbooks.

Table 35

Vocabulary Words Chosen Repeatedly for Instruction From a Particular Passage by Experimental and Control Teachers

Vocabulary Words
impact
economy
immigrants
junction
locomotives
stockyards
depot

The NRP (2000) report identified explicit instruction as one of the most important methods of teaching vocabulary. Armbruster et al. (2003), in the research building blocks section on vocabulary, explained that:

> Specific word instruction or teaching individual words can deepen students' knowledge of word meanings. In-depth knowledge of word meanings can help students understand what they are hearing or reading. It also can help them use words accurately in speaking and writing. (p. 16)

Biemiller (1999) explained the substantial effect on children exposed to a wider range of vocabulary and the importance of explanation of unfamiliar words. Direct and indirect instruction, along with active engagement in learning tasks, and the use of

activities intended to enhance comprehension are important instructional factors in vocabulary learning according to Vaughn and Linan-Thompson (2004). As indicated in Armbruster et al. (2003), word-learning strategies using word parts, evaluating the depth of student knowledge regarding words, and emphasis on multiple meaning words are all important aspects of teaching when aiming for the ultimate goal of student comprehension. Eight different textbooks emphasized vocabulary instruction with multiple strategies. This is only a small sample of the textbooks that are available, but many common strategies were found such as explicit instruction, graphic organizers, semantic feature analysis, word association and word relationships, structural analysis, contextual analysis, modeling, and activities to promote comprehension such as main idea, summarizing, predicting, anticipation guides, underlining and highlighting, working together in teams or pairs, rereading text, building background knowledge, and comprehension monitoring.

While all of these strategies have their place in helping students, it was interesting to note that some of these were strategies teachers were not familiar with, had little knowledge of, and/or seldom used. Only three of the strategies teachers were most likely to use were chosen with any repetition, and those included building background knowledge, explicit instruction of vocabulary, and the use of context clues. It was also demonstrated that one teacher's version of explicit instruction of vocabulary could be quite different from another teacher's version of explicit instruction. This difference could have a direct effect on student learning.

The multi-component strategy instruction in this study provided opportunity to combine strategies and to assist teachers in incorporating activities and instruction they currently use in a format provided through the consistent use of explicit instruction, student study teams, active engagement in learning tasks, vocabulary maps, connections webs, and semantic feature analysis. In many cases, teachers were not familiar with strategies by name but may have used something similar for instruction. For example, a number of teachers denied having any knowledge of what semantic feature analysis was, and yet, when they saw examples with the curriculum, they recognized activities akin to what they were doing in their classrooms. They would then acknowledge that they were familiar with the use of a strategy but had never used or heard the terminology. The curriculum guides were an opportunity to demonstrate the use of these strategies with their curriculum in different formats. Teachers were able to see semantic feature analysis in the context of their specific curriculum. The examples of mapping, a part of the curriculum for the teachers and students, provided a bridge for students to elaborate on a simple word and stretch their thinking beyond the vocabulary map and/or the content in the textbook. These were observed behaviors and contributed to the validity that implementing a multi-component strategy in a classroom setting can and does offer improved performance for students. Additionally, the games and activities increased their enthusiasm for learning, while enhancing their word knowledge, comprehension, and ability to apply what they learned to their specific knowledge regarding the content.

Teachers were asked to reflect on the strategies used during the study and were asked to rate a number of different experiences. One of the ratings was whether or not

they believed their students had benefited from the study and the materials associated with the study. Of all of the experimental teachers, every teacher rated this one as three or four. Table 36 represents the ratings.

Table 36

Ratings of the Benefits of the Study and Use of Curriculum Materials to the Students in the Experimental Group

Rating	Benefit
1	no benefit at all
2	very little benefit
3	some parts of the study were very helpful to the students
4	all parts of the study were very helpful

Sometimes time for implementation was difficult. There were two primary concerns on the part of the teachers. One was associated with the lack of time and the other concern was whether or not the focus on vocabulary was allowing them to be inclusive enough with the content in the textbook. Actually, the study was intended to combine vocabulary and content. However, the teachers wanted more time to read and focus on the material in the text, in addition to the vocabulary focus. Hence, time was a factor.

Another rating used in the survey of teachers at the end of the study was associated with student progress. When asked whether or not the teachers believed that

students were gaining knowledge as a result of the content from the curriculum materials for the study, all teachers rated this one with a three or four. Table 37 outlines the ratings. It is worth noting that many teachers and administrators believed this type of instruction would be very beneficial in ESL classrooms as well. Several asked if they could use the materials within the confines of their ESL classes.

Table 37

Ratings of Student Progress by the Experimental Teachers Using the Content From the Curriculum Materials Designed for This Study

Rating	Rating of Student Progress
1	never
2	rarely
3	yes, some of the time
4	absolutely; no doubt they were learning vocabulary and/or content

Finally, when asked about whether or not their personal instructional practices had changed, almost all responded with a three or four. Table 38 explains the ratings. Many of the teachers had already started using some of the materials on a regular basis shortly after the study ended, and only two said their instructional practices had changed very little as a result of the study. The teachers were favorable about many of the parts of the study, particularly word and/or vocabulary maps, word journals, the games and

activities and several of the writing activities. Experimenting with practices to determine their effectiveness is critical for improving our classroom instruction. In this case, the study demonstrated that the students were retaining the knowledge and that the actual parts of the study might carry over and be continued in the classroom. More importantly, teachers were interested in continuing with some change in instructional practice, which equates to continued retention in the future. The measures used in the study to answer this question clearly demonstrated that students had retained their acquired knowledge during the study at the end of 12 weeks, or six weeks post-intervention.

Table 38

Ratings of Experimental Teachers and Their Changes in Instructional Practices as a Result of the Study

Rating	Change
1	no change at all
2	very little change
3	practices have changed; using some of the ideas or strategies from the study
4	using several things from the study now in some form and plan to use more in the future

Suggestions for Future Research

The next step would be to extend this particular study by developing long-term curriculum into a full school year to evaluate the outcomes with an extended period of

intervention. The study brought about several possibilities for future research extending this study. One possibility would be to replicate this study using more classrooms, allowing for the use of hierarchical linear modeling.

Since this study focused on social studies, a future study involving other content areas such as science might provide insight into the effect of multi-component vocabulary strategy instruction in additional content areas. Comparing the outcomes in multiple content areas could assist in drawing conclusions about similarities and differences in vocabulary strategy instruction using different content. What constructive conclusions might be drawn based on the outcomes?

The question as to why teachers chose the words they did for emphasis as opposed to other words might provide some opportunity to use professional development to assist teachers in their selection of words. Would that help achieve more in the area of student learning? Finding ways to improve instruction for teachers with its impact on students is clearly a goal worth striving to reach. Further in-class studies could help with this goal. One of the primary goals of educational research is to solve problems that are relevant to student achievement. This requires that interventions that are research based find their way into classrooms. To increase the likelihood of research translation to practice, the research content and curriculum should reflect the requirements of the classroom.

It would also be interesting to implement a similar study at a higher grade level and focus on the knowledge of morphology and orthography in middle and high school students to see what their level of understanding is past this “fourth-grade slump.” What

have students learned that will allow them to use these processes and strategies to comprehend the complex vocabulary they encounter in later grades? Is there evidence to support that these students had already been introduced to multiple strategies to improve word knowledge and understanding in the earlier grades?

To more thoroughly evaluate the implementation of curriculum dedicated to the use of multi-component vocabulary strategy instruction, it is necessary to conduct further studies similar in nature. Durkin's (1976) landmark study of the time spent on comprehension was revealing. A similar study in strategy instruction and vocabulary could yield valuable information for effective instruction in the classroom. Observing current classroom instruction would assist in the preparation of curriculum to meet the need of, again, reflecting the requirements of the classroom at any level.

The use of a comprehension component that would offer additional questions over an extended time to demonstrate greater reliability, validity, and gains in progress is essential. Although all testing measures showed greater improvement in the experimental group, in some cases, the gain was small. However, as mentioned previously, in many cases, administrators might welcome even a small gain. It would be prudent, though, to generate a study of longer length to demonstrate greater gains and long-term retention. It seems that researchers agree that vocabulary instruction and its application in the classroom is critical; however, it is also critical that more studies are completed in classroom settings that allow investigation of current practices and test the value of future practices.

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APPENDIX A

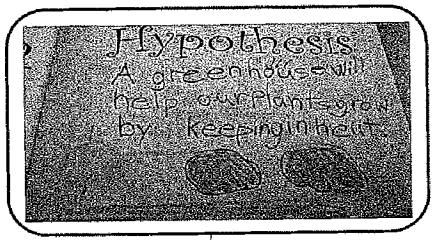
VOCABULARY MAP EXAMPLE

Scientific Inquiry

2. Definition: Underline the key words.

a possible answer to your problem or an educated guess.

3. Illustration: This picture is an example of the definition of the vocabulary word.



4. Context: Circle the correct sentence.

A rabbit is a **hypothesis** to a wolf.

You must test your **hypothesis** using the scientific method.

1.

hypothesis

5. Words that are related: Choose two related words.

A. liquid
B. awkward
C. guess
D. test

7. My Definition: Write your own definition.

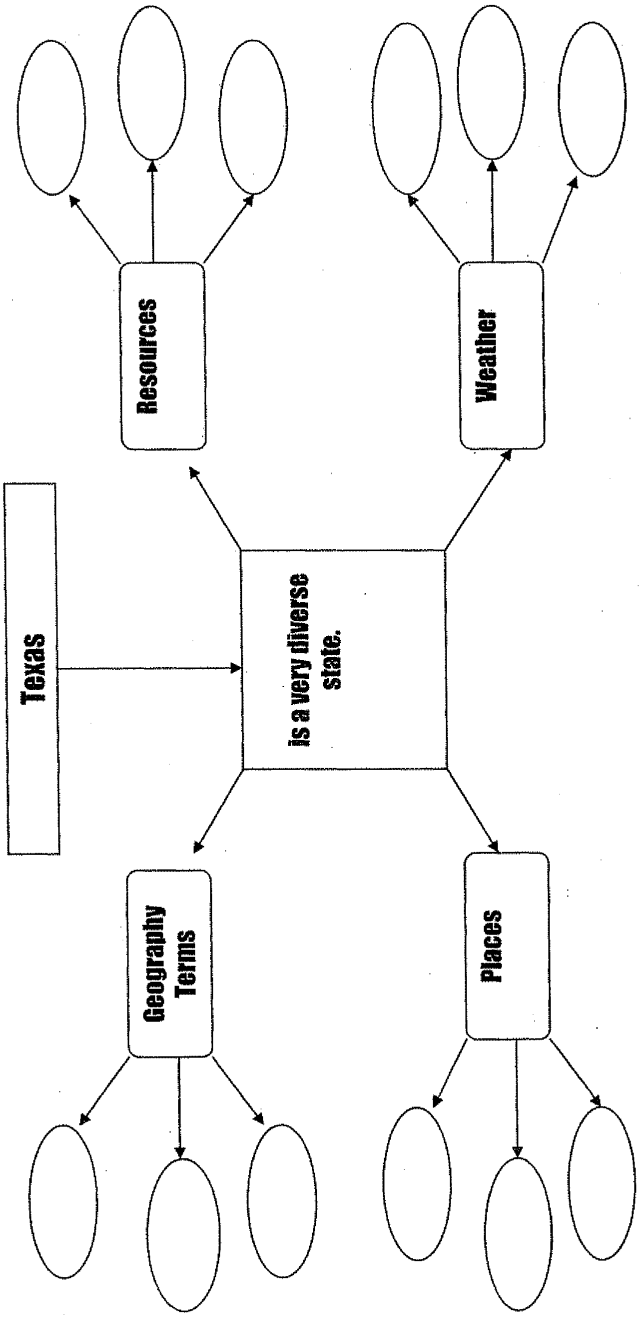
6. Where I would hear/see this word: Choose two answers where you could see or hear this word.

A. scientific experiment
B. football field
C. movie theater
D. science lab

Week 1 Lesson 1 Scientific Inquiry
Materials used and/or adapted from the Teacher Quality Grant #R305M050121A, Department of Educational Psychology & Teaching, Learning and Culture at Texas A & M University & The Vaughn Gross Center for Reading and Language Arts at The University of Texas.

APPENDIX B

CONNECTIONS WEB



Connections Web – Week 6, Lesson 1

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